FEBRUARY 1, 1960

NEWS IN PERSPECTIVE

ECONOMIC CLIMATE

THRIVING BUSINESS points the way toward a banner year. Substantial gains in employment, personal incomes, and corporate profits are indicated--at a time when the government's cash budget is expected to have an anti-inflationary influence on the economy. Official estimates--which may be exceeded if the pace of business keeps up--call for a personal income rate of $402-billion (up $22-billion from 1959) while corporate profits will rise to $51-billion from 1959's estimated $48-billion.

INDUSTRIAL OUTPUT is up sharply. Production of consumer durables is about 13-percent above the 1957 average. Production of apparel, foods, other non-durables and some appliances is at advanced levels. Employment is zooming, and average factory wages are a new high--over $91.50 a week. Nevertheless, average commodity prices show little tendency to advance.

FOREIGN COMPETITION apparently will grow, making inroads in the market for American products at home and abroad. In one utility-related industry, hydraulic turbines, the government sees a mediocre year "even under the most favorable conditions." Orders may be placed this year for 8 new projects (7 federal, 1 private) with a possible 1.8-million hp. As it is, scheduled shipments of turbines will be 30-percent under last year,and new orders call for only half the industry's yearly capacity.

"Should a substantial portion of this business be awarded to foreign bidders, a severe impact will be imposed on the domestic industry's future operations," says the Business and Defense Services Administration.

IF PRICE RISE CONTINUES, says Joseph B. Homsher, chairman of the NAPA Public Utility Buyers' Group, "we will become increasingly vulnerable to foreign competitors."

In opening the recent annual meeting of the Buyers' Group, Mr. Homsher (of Gilbert Associates, Inc.) adds: "The capital expenditures of utilities have not been in line with the pre-strike boom, but predictions are that there will be an upswing that should continue through 1965. As we enter the year 1960, many observers feel that the inventory policy will play a very important part in the predicted rise in business. Although expenditures for capital equipment will be slow during the early part of this year, they should expand more rapidly during the latter part."

WASHINGTON INFLUENCE

NATURAL RESOURCE SPENDING at record high of $1.9-billion is proposed by the President in his fiscal 1961 budget. This includes, in addition to operating costs, $965-million to continue work on projects already started, $12-million for advance planning, and $18-million for first-year costs of 42 proposed new starts. Projects involving power among the new starts are: addition of units 7 and 8 to the Bull Shoals Reservoir; Green Peter reservoir; construction and rehabilitation of 4 Reclamation projects, including Yellowtail; 2 projects in the Upper Colorado River basin, including Curecanti; TVA's Melton Hill multi-purpose project, and its Paradise steam unit No. 2. The President urged Congress to approve the Fryingpan-Arkansas project, as well. Over a period of years, these 42 new starts are expected to cost a total of $496-million.

PUBLIC POWER GROWTH now planned for the years to come equals a rise in federal capacity of almost 50-percent from the end of 1958. A total of about 31,700-megawatts is contemplated with almost 30,000 mw to be completed by the end of 1965. At the end of 1958, the government had slightly less than 21,000-mw in operation. Despite this public power growth, federal generation will be only 14.1-percent of the capacity of major privately owned utility systems at the end of 1962. At the end of 1958, the federal share was 15.2-percent of private capacity.

REA FINANCING proposals made by the Administration in the past have been repeated this year. Outlook for favorable Congressional action is very dim. The President has asked for a realistic interest rate on REA loans as well as for legislation placing the agency's operations on a revolving fund basis. Long-range, the Administration would like to see REA's finance themselves from a mutually-owned bank, with the government acting only as a bank of last resort.

COLUMBIA RIVER BASIN recommendations made by Gen. Itschner, Army Chief of Engineers, calls for 13 new water resource projects having an estimated federal cost of $1,132,138,000.

$20-MILLION DEFICIT has been accumulated for Southeastern Power Administration from its beginning through fiscal 1958, according to the Comptroller General's audit. Net loss for 1957 was $3.9-million and for 1958, $1.5-million although GAO finds these losses "significantly over-stated." Except for three projects, "the average annual revenues anticipated by SEPA will be sufficient to repay the annual investment allocated to power within 50 years using either the Corps' or SEPA's cost allocations."

U.S.-SOVIET ELECTRIC POWER RACE and a possible U.S. lag--seemingly the conclusion drawn by the Senate delegation visiting the USSR--is derided by Sen. Bennett (R., Utah). He says the group's recommendations "simply cannot be taken at face value." (See p. 28.)

INDUSTRY SIFTINGS

AUTOMATION IS BOOMING: Operational information system installed by Daystrom, Inc. at a Louisiana P.& L. Co. station near New Orleans has performed 99.76-percent of the time since; and systems like it have been ordered by Carolina P.& L. Co., Kansas G.& E. Co. and Gulf States Utilities Co. For billing and accounting work, new Honeywell-800 data processing systems have been ordered by Philadelphia Electric Co. and So. Cal. Edison. And, at least two companies (Detroit Edison and Commonwealth Edison) report satisfactory application of automatic equipment in requisition and related work in purchasing operations.

ATOMIC INDUSTRY GROWTH is in for its annual review by the Joint Committee of Congress, which has scheduled the "202" hearings required in the Atomic Energy Act, for Feb. 16 through 19, and 23 through 25.

ELECTRIC HEAT SURVEY being conducted currently (Jan. 5 to Feb. 5) by the Northwest Electric Light & Power Association is depending on the nine participating utilities to meter at least 10 single-family residences, all with primary electric heating and using no other supplemental fuel. Aim is to determine (1) the maximum demand imposed by a representative space heating customer on the utility system and (2) the demand imposed by that customer at the time of the utility system's peak demand.

PATENT SUIT DECIDED--On January 6, the U.S. Dist. Court (N. Dist. of Ohio) announced its decision in the action brought by Preformed Line Products Co. against The Fanner Manufacturing Co. Judge Charles J. McNamee, who tried the case, held the dead end patent (U.S. Patent No. 2,761,273) valid and infringed by Fanner but denied any damages or injunction to Preformed until certain commercial practices which he found to be "misuse" of the patent are shown not to have been "misuse" or to have been terminated. The "short pitch" armor rod patent (U.S. Patent No. 2,609,653) was found invalid and not infringed by Fanner. Preformed's claim of unfair competition was dismissed for lack of jurisdiction, without prejudice to the right to bring such an action in a court of competent jurisdiction. Fanner's counter claim for damages was also dismissed.

APPLIANCE BOOM IN '60'S--For every two appliances sold in the '50's three will be sold in the "Golden '60's," predict Hotpoint market research experts. The yearly volume, they predict will include: 4.5-million refrigerators, 1.1-million electric ranges, 3.8-million automatic washers, 1.3-million clothes dryers, 2.2-million air conditioners and 900,000 dishwashers.

LIGHT AGAINST CRIME--That's the new campaign weapon in Manhattan, which has inaugurated a new $3,265,000 program to improve street lighting in its fight against crime and juvenile delinquency. The Police Dept. has designated high-priority areas most in need of modern lighting, and the incandescent lamps in these areas will be replaced with mercury-vapor lights.

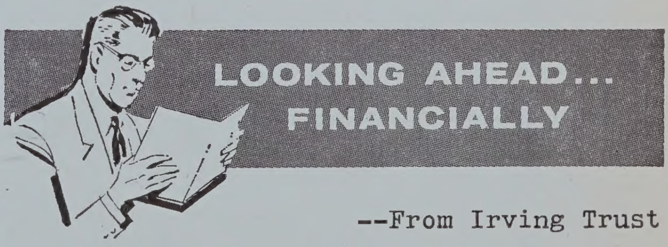
"NOT A PUBLIC UTILITY" is the way an electric cooperative rates in New Mexico. That state's supreme court ruled recently that such a cooperative, which is not obliged to serve the public generally, is not a "public utility" under the state's Public Utility Act. Therefore, the ruling found, the cooperative has no standing before the New Mexico Public Service Commission to protest the application of an electric utility to erect competing power lines (Scorro Electric Cooperative, Inc. v. New Mexico P.S.C., Dec. 21, 1959).

CIVIL ENGINEERING PROJECTS considered to be the outstanding achievements in 1959 include the Oahe rolled earth dam on the Missouri River in South Dakota, Priest Rapids Dam on the Columbia River in central Washington, the St. Lawrence Project and TVA's Wison Lock at Wilson Dam, Muscle Shoals, Alabama. They are among a dozen projects selected by ASCE.

ELECTRIC BLANKETS--NYAT! Russians turn up their noses at these (and other electrical products), observers report. Their attitude: using electricity to keep warm is a ridiculous extravagance. But, as a Chicago newspaper editorial recently commented, "If Moscow's equivalent of the Commonwealth Edison Co. could boast, as 'Little Bill' does here, that 'electricity costs less today, you know, than it did 25 years ago,' Ivan would sleep under electric blankets." Yet, as EEI's Vennard observed recently, "It is difficult to see how the Russians can develop quickly the kind of consumer economy needed (to bring down the industrial proportion) ... even though there is considerable evidence they wish to."

OVERSEAS PUMP-TURBINE installations --the first in Italy and Japan--will be made by Allis-Chalmers in 1960. The unit to be installed near Rome will pump 600-cfs at 860-ft dynamic head; the unit scheduled to serve the Naygoya area of Japan will be rated 1600-cfs at 250-ft dynamic head.

PACKAGING-MARKETING SERVICE has been established on a "nationally integrated" basis by the newly formed Packaging Corp. of America. Following the merger last year of American Box Board, Central Fibre Products and Ohio Boxboard Corporations, the organization now utilizes for its service "to meet the special and changing needs of the electrical industry," a network of eight major mills and 41 converting plants distributed across the nation.



LOOKING AHEAD... FINANCIALLY

--From Irving Trust

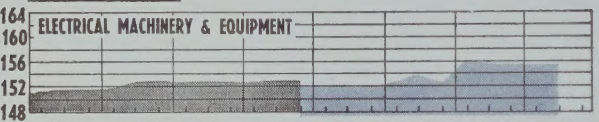
Construction totals (based in some cases on preliminary figures) for principally electric utilities with assets of over $35-million, 1959—$3.6-billion, 1960--$3.7-billion. Financing by these companies in 1959 totaled $1.9-billion and it appears that the 1960 total will be about the same, based on estimates from companies comprising about 90-percent of the 1959 total. Financing by gas companies with assets of over $35-billion aggregated at least $.9-billion.

Financing scheduled for the first quarter of 1960: Electric: $280-million --Bonds $240-million (of which $35-million is completed), preferred $12-million, and common $28-million. Gas: $66-million--Bonds $36-million and preferred $30-million (of which $15-million is completed).

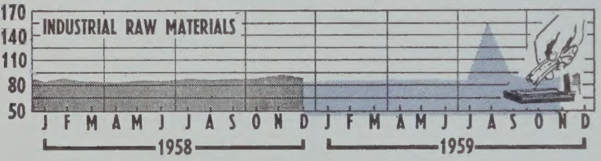
While scheduling could not be called heavy for the first quarter, there have been some problems avoiding conflicts when several companies had planned on the same day for their offerings.

MARKETING GUIDEPOSTS

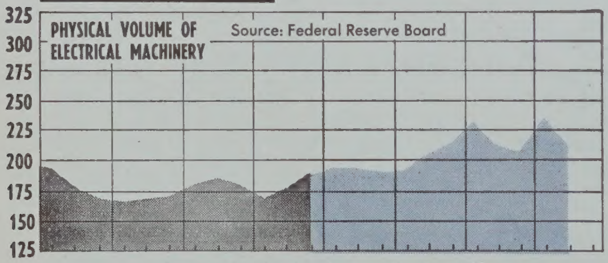
INDEX OF PRICES Source: U. S. Dept. of Labor (1947-1949 = 100)



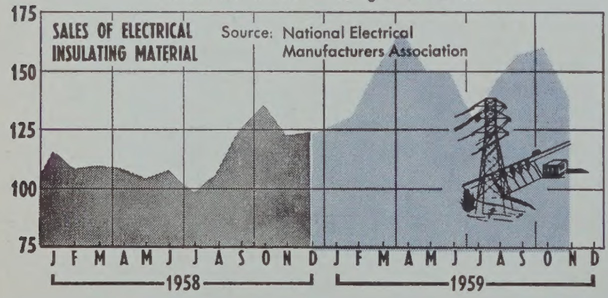
SPOT PRICES IN PRIMARY MARKETS AVERAGE OF 13 COMMODITIES



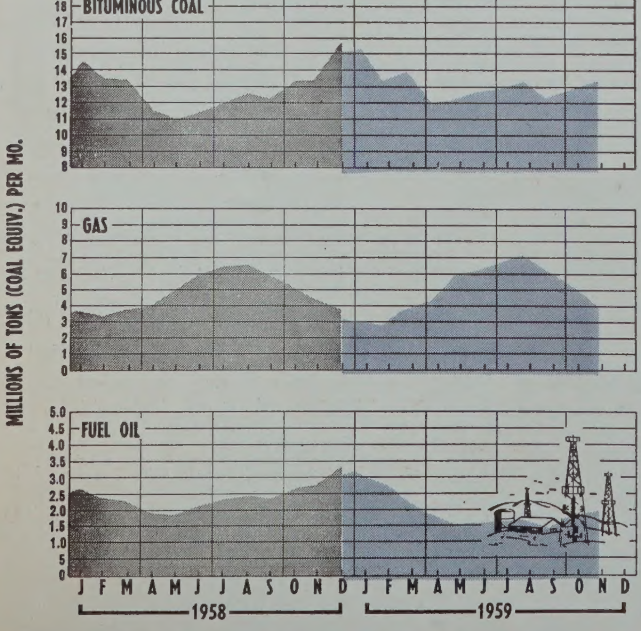
ELECTRICAL MANUFACTURING



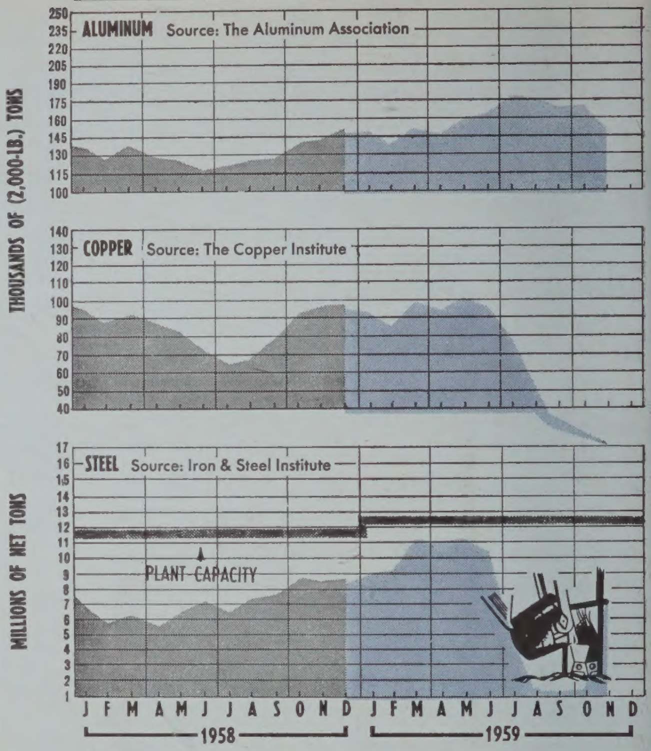
Based on 1947-1949 Average Month = 100



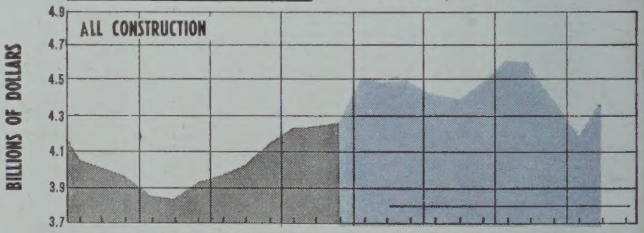
FUEL CONSUMPTION **ELECTRIC UTILITIES** Source: Federal Power Commission



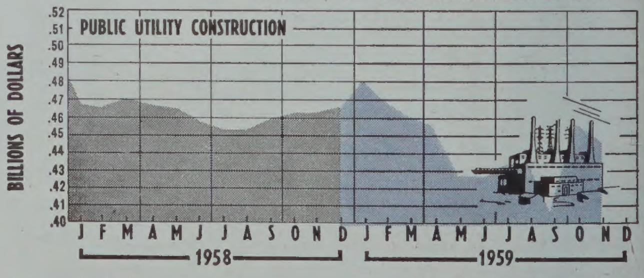
U. S. PRODUCTION OF PRIMARY METALS



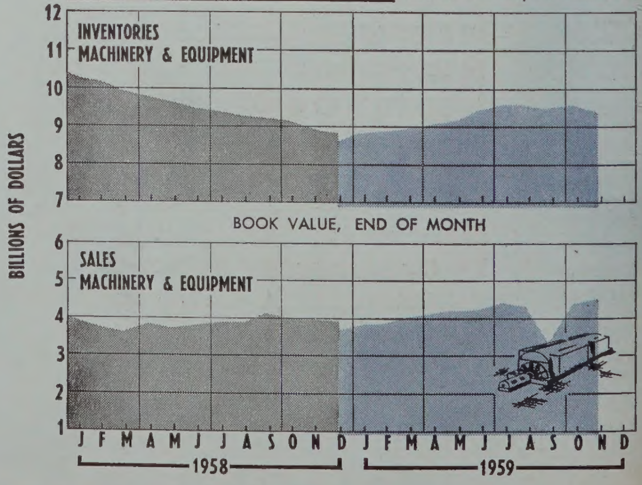
NEW CONSTRUCTION ACTIVITY Source: U. S. Dept. of Commerce



PERCENT CHANGE MONTHLY, COMPARED WITH PREVIOUS YEAR.



MANUFACTURERS' INVENTORIES & SALES Source: U. S. Dept. of Commerce



BOOK VALUE, END OF MONTH

EL and P MANAGEMENT/MARKETING

Liberalized Depreciation In Rate Cases Is Studied

How is the concept of "liberalized depreciation" faring in recent rate decisions by state regulatory commissions?

A summary of their disposition has appeared sufficiently revealing to prompt the Middle West Service Company to prepare a study for distribution to interested utility companies.

The study shows how the state commissions have treated liberalized depreciation in respect to both accounting order procedure and rate making practice. Where available, recent rate decisions are listed to show the levels of return authorized by the various commissions.

The Middle West study also includes a summary showing the percent return authorized in these recent cases arranged in accordance with the practice of the commissions in their handling of liberalized depreciation (both for "original cost" and "fair value" states).

A tabulation of the rate of return allowed electric companies under various treatment accorded liberalized depreciation is reproduced here. For comparative purposes the rate of return in fair value states was estimated on an original cost basis. For further comparison, where the flow-through method was adopted, the return was estimated on a normalized basis. The result of this study is as follows:

(1) On a comparative basis, that is, where fair value is reduced to an original cost basis, companies are allowed to earn a higher rate of return in fair value states than in original cost states.

(2) The percent return where the flow-through method is used is less than where normalization is used.

The study indicates the present practice of the various commissions; however, it may be some time before definite trends in the industry are established.

Similar results were found for gas companies, although the allowed return exceeded the electric companies on the average by 0.40% to 1.67%.

Copies of the study are available on request from Middle West Service Company, 20 North Wacker Drive, Chicago 6, Illinois.

Average Returns Allowed in Electric Company Cases

Rate Decisions in FAIR VALUE States	Deferred taxes permitted as an operating expense		Deferred Taxes not permitted as an operating expense	
	No deduction of accumulated reserve from the rate base	Accumulated reserve deducted from the rate base	Actual	Normalized
Average return allowed on fair value	5.75%	5.85%	5.31%	5.11%
Average return allowed on estimated original cost	6.96%	6.15%	6.40%	5.20%
Rate decisions in ORIGINAL COST states				
Average return on original cost	5.98%	6.14%	5.85%	5.61%

Marketing Utility Services

Getting more and more attention from national organizations, utility marketing problems will be discussed in the American Marketing Association's sixth annual Public Utilities Seminar in St. Louis, Feb. 18-19.

Atom Is the Catalyst

N. Y. Group Studies Future Power Needs

If the role of nuclear power is no more than that of catalyst in producing new and potent cooperative effort among private power companies, considerable credit must be given to it.

Working that way in the state of New York, the new challenge of the atom in the electric power business was largely responsible for bringing together the seven utility companies which serve 98-percent of the power users in the Empire State. Early in the new year, they announced formation of Empire State Utilities Power Resources Associates, to study "ways of providing for future power needs at the lowest possible cost."

Initial aim of the program will be exploration of the economics of atomic power in an attempt to speed its development in the state. And, back of of the objective was the end-of-the-year recommendation to Gov. Rockefeller by his advisory committee on atomic development that nuclear power be developed jointly by private utility systems of the state.

But, the new association is assuming the broader responsibility for "studying *all* aspects of electrical power generation and transmission required to meet the future power needs of the state at the lowest possible cost," according to the head of one of the seven member companies, Ernest R. Acker, president of Central Hudson Gas & Electric Co.

The utility companies participating, in addition to Central Hudson, are: ConEdison, N. Y. State Electric & Gas, Niagara Mohawk, Rochester G. & E., Orange & Rockland Utilities, and Long Island Lighting. A former president and board chairman of R. G. & E., Alexander M. Beebee, is executive director of the new group.

A long-range plan for expansion of the statewide network for power interchange, to promote greater efficiency and economy, as well as the extension of pooling arrangements to interchange power with utility systems in adjoining states are to be considered as means of achieving further economic benefits.

Mr. Beebee said, "The electric utilities of New York State have pooled power and consulted together on plans and operations for more than thirty years. Through ESUPRA, we will be able to greatly extend the time-range and degree of this helpful interchange."

According to Charles E. Eble, president, Consolidated Edison Company of New York, Inc., "The formation of the Empire State group represents a significant forward step in preparing to meet New York's power needs of the future. The continuing advances in electric power technology, combined with the growing size of the electric power systems in the state, afford increasing opportunities for future improvements in economies and efficiencies. The establishment of this group is recognition of these opportunities.

"We owe it to the consumers in the state to continue exploring every practical means of improving the efficiency and economy of our operations so that electricity will always be cheap and plentiful," Mr. Eble added. "The studies of Governor Rockefeller's Committe on Power Resources were of valuable assistance in focusing on the potential benefits in this regard of increased joint action by the utilities in the state, and these in turn led to the formation of the Empire State group."

The utilities of New York State are already participating extensively in the development of atomic energy for power production and are engaged in programs estimated to over a half-billion dollars. New York State utilities are already supplying over 20-percent of the cost of these efforts with the construction of three plants—Con Edison's Indiana Point Station; Detroit Edison's Enrico Fermi Station, supported by a group of companies which includes nearly all the ESUPRA group of companies; and the HTRDA plant near Philadelphia being built by a group of 53 utilities, among which are Niagara Mohawk, New York State Electric & Gas and Rochester Gas and Electric.

The electric generating capacity available in New York State during the next few years is considered to be more than sufficient to provide for the estimated loads, so that this "ample capacity" situation will give the ESUPRA group time to take advantage of progress in atomic power.

Minneapolis-Honeywell Vice-President Walter W. Finke (left) and Southern California Edison Vice-President T. M. McDaniel, Jr., sign order for Honeywell 800 all-transistor computing system for the utility.

Other persons initially identified with the group's activities include: John E. Dunning, dean of engineering at Columbia University, who will direct the nuclear program, and Howard Harrington, of Niagara Mohawk, who will head the study of the state's transmission system.

Professor Dunning will be assisted in this work by Sidney M. Stoller, formerly of Vitro Engineering Corporation, atomic engineering consultants, and by technical personnel of ESUPRA member companies.

The other part of the electric power resources program calls for a long-range plan for the expansion of the state-wide network over which power is interchanged daily for reasons of efficiency and economy.

This study will consider not only the size and physical location of both generating and transmission facilities but will explore the economic benefits that should result from the extension of pooling agreements between New York State companies and utility systems in adjoining states.

So. Cal. Edison to Use All-Transistor Computer

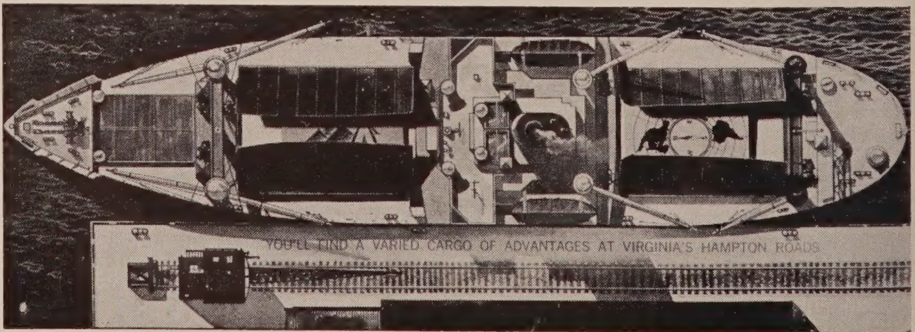
A "second-generation" computer is being applied by Southern California Edison Company to set up an all-transistor computing system initially capable of preparing and processing all of the billing and accounting for approximately one million customers. Edison recently signed a contract with Minneapolis-Honeywell's Datamatic Division for a Honeywell 800 system to be installed in a new building to be constructed in Long Beach, reports T. M. McDaniel, Jr., vice president.

The new computer is described by Honeywell's Vice-President Walter W. Finke as a "new, transistorized system so flexible it can do data-processing and scientific computation simultaneously at lightning speed."

Evidence of the Honeywell 800 system's speed, Mr. McDaniel said, is its ability to select, compute and print over 25,000 customer bills in a single day. It can be expanded to accommodate the company's growth requirements.

He said the utility company's personnel are now working on what is possibly the most difficult, time-consuming task in connection with conversion to electronic processing. This is the change from present punch card methods to a system or program adaptable to the computer and accessory equipment—a job which will take approximately 18 months.

Since construction of the 10-story building in Long Beach will not be completed until 1961, the company is able to set aside space specifically for the electronic data system. This offers advantages not possible in the normal situation in which the computer system is adapted to an existing building, Mr. McDaniel said.


YOU'LL FIND A VARIED CARGO OF ADVANTAGES AT VIRGINIA'S HAMPTON ROADS

This direct mail piece by the Virginia Electric and Power Company won "Best of Show" among over 800 entries in a recent exhibition of advertising and editorial art in Richmond, Virginia. It shows a cargo vessel with open hatch covers advising industry of the advantages of locating in Hampton Roads, Virginia. When die-cut covers are opened, enclosed paper strips with copy imprinted may be removed for reading. The company invites contacts with its Area Development Department for personal assistance, offering site-finding services.

Prime Movers Group Nears 100th Meeting

EEI's Prime Movers Committee is meeting this week for the 99th time, in Cleveland (Feb. 1, 2 and 3).

After nearly 100 meetings held over many years, the 100-man group is functioning smoothly and productively, utilizing a happy solution to the problem of unwieldy, big-committee operation—subcommittee and task force concentration on an informal discussion of power station operating and design problems.

That's the only way the group can possibly handle "well over 100 topics, reports and reviews of research projects and activities in which we have an interest," says the committee's new chairman, T. O. Thompson, of the Wisconsin Electric Power Co.

This long list of "101 topics" currently interesting the committee includes a few good clues to the utility industry's more pressing operating and design problems, of course. For example, from the agenda of the last meeting (held in Oct., at Charlotte, N. C.), these subjects drew considerable attention:

1. Furnace explosions, appearing to be on the increase in frequency and intensity, are now getting the concentrated attention of the Boilers and Combustion subcommittee.

2. Power station coal handling practices and equipment have been the object of a recent survey of committee membership, providing the Fuel and Ash-Handling subcommittee with new material for study.

3. Encouraging progress in the use of austenitic steel for steam line service and in superheater tube service, being pursued by various research groups, is being followed closely by the Metallurgy and Piping Task Force.

4. Deterioration of concrete stacks, a matter of increasing concern to power station operators, is being investigated by the Power Station Structures and Facilities subcommittee.

5. The experience and status of power that automation programs recently completed or underway are being studied by the Station Instruments and Control subcommittee, which is also studying turbine supervisory instruments, furnace flame detectors and boiler level indicators.

6. The Turbine and Condensers subcommittee is studying (a) the rate of load pickup, (b) practices on overnight and weekend shutdowns and their possible correlation with case-cracking problems, and (c) practices regarding peak-load capacity of turbine-generator units.

The Prime Movers Committee also hears periodically about such research projects as: (1) the status of the ASME high temperature steam project, (2) developments in the ASME extension of steam tables program, (3) the effect of temperature on the properties of metals, and (4) BCR work on sulphur removal from coal and flue gas contaminants control.

A one-day flying trip to General Electric's Nela Park, Cleveland, Ohio, to see practical demonstrations of modern office lighting and to hear of the latest developments in the art was made recently by 48 leading New York architects, engineers and interior designers. C. Wesley Meytrott, sales vice-president of Consolidated Edison Company of New York, arranged the trip on learning that the lighting specifications of many of New York's new office buildings now under construction or being planned were substantially below the revised levels recommended by the Illuminating Engineering Society earlier this year. At Nela Park, the visitors attended a full day's program of lectures and demonstrations. Topics included a review of the history of lighting standards, the practical nature of the new I.E.S. standards, the cost of office lighting in relation to other construction, maintenance and labor costs, the integration of lighting, heating and air-conditioning and the increasing importance of lighting in architectural and engineering design.

Georgia Power Helps Pay For Residential Wiring

Probably unique in the country, a new wiring plan designed by the Georgia Power Company to help its customers live better electrically is being enthusiastically received by electrical contractors, builders, appliance dealers and other groups throughout the state, according to John J. McDonough, company president. The plan, in which the power company pays a large share of residential wiring costs, went into effect January 1.

Georgia Power sees a huge potential for the plan. "Four out of every five homes in Georgia do not have the kind of wiring needed for lights and the efficient operation of appliances," according to Mr. McDonough. This is true even among the many new homes that are being built.

The higher cost of good wiring is one of the main factors deterring many contractors and homeowners from building homes with enough power outlets and good wiring to meet today's electrical requirements. In order to help eliminate this "bottleneck" of inadequate wiring, the power company proposes to pay a large share of the cost of installing heavy-duty service entrance wiring in residences on its lines. Both existing homes and those to be constructed are eligible under the plan.

The payments are being made to the electrical contractors doing the work, and the wiring will be the property of the power company. To qualify, a customer must install certain circuits of his own, as well as certain designated appliances that require the heavy-duty wiring. The payments to be made by the power company range from $50 to $200, depending upon the individual job and the appliances installed. In all instances the service entrances will be of a capacity to serve the power requirements of the future as well as those of today.

Details of the wiring plan are being presented to builders, electrical contractors, appliance dealers, real estate developers and architects.

WASHINGTON OUTLOOK

by RALPH ELLIOTT
Washington Editor

Senate Group Lays Groundwork For Public Power Propaganda

The report of the so-called special Senate subcommittee covering its tour of Russian hydro power developments, lives up to expectations as an instrument designed for generating public power propaganda. It will be much in evidence during this session of Congress as the main offensive weapon in a new drive for more government in the electric power business.

Immediate reaction to the report indicates that the forthcoming partisan debates over it are likely to be high-spirited, but low in enlightenment. Thus far, at least, the arguments have centered principally around the report's accuracy or inaccuracy concerning the rate at which the Soviets are "catching up" with the U. S. in power production. Precious little has been said about the one all-important factor involved: that no statistics purporting to show the relative abilities of the two countries to produce power are significant unless equated with those countries' relative needs for power.

The same holds true with respect to the report's emphasis on such things as the bigness of modern Russian power dams and generating units, transmission line capacities, transmission grid concepts, and souped-up construction schedules. No doubt these things hold some interest as achievements toward the still far-off goal of meeting the specific requirements as they exist in Russia. But certainly they are no reason for frightening concern, as the report infers. Because in this country the goal of meeting—totally and efficiently—our specific power requirements has long since become a continuing achievement.

As long as power is not a limiting factor in this nation's productive capacity, it's hard to see the cause for alarm over what Russia may be doing to meet its power needs. This is not to say that we could afford to ignore any Soviet scientific breakthrough that could be applied beneficially to U. S. power systems. But the delegation discovered no such break-through.

What the subcommittee obviously is trying to sell is a stepped up program of government power development and a series of federal transmission grids. This was the expected end result when the three Democratic Senators and their predominantly public power-minded staff took off for Russia. (See December 1, 1959, issue, page 48). The subcommittee's recommendations wipe out any doubt that the group's make-up, politically and philosophically, was completely one-sided. Here's the way Senator Wallace Bennett (R-Utah) described the situation:

"The subcommittee took along as its consultants lobbyists for the point of view that government should replace free enterprise in the power field. These included the general manager of the American Public Power Association (Alex Radin), the general manager of the National REA Association (Clyde Ellis), and two former Bureau of Reclamation officials under the Truman Administration (Mike Straus and Harvey McPhail). It is little wonder that a group so dedicated to public power should produce a report which disparages the accomplishments and the future of our free enterprise system in the production of power."

Sources in the subcommittee's parent Interior and Public Works committees were quick to note that all members of both committees were invited to make the Russian tour. A Republican member has pointed out, however, that Interior committee chairman James Murray (D-Mont.), a government power advocate, already had "pretty well arranged the affair" as a public power party before the invitations went out. "In this particular case, where the real objective was so clear," said the Republican, "making the trip and filing the obviously called-for opposition views was not worth spending that much of the taxpayers' money."

The subcommittee report's intended punch-line, its would-be scariest assertion, is the "The U.S.S.R. is catching up with the U.S. in electric power production," and "the Russians could overtake us in 1975 . . . unless we speed up or they slow down." Then come the recommendations, including the following, for dealing with the situation:

An "accelerated effort" in the U.S. to "develop fully" our water resources "with particular attention to utilization for production of hydroelectric power."

A "continuing study" by Senate committees to assure planning on a national basis for the "fullest possible use" of all electric power resource potentials.

Continuation and expansion of transmission line construction by the Federal Government "to interconnect and market power from federal projects and, where feasible, to transmit privately generated power."

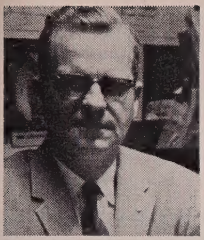
Revision of accounting systems to provide, among other things, for "realistic periods of amortization" for federal projects.

Federal Government "encouragement" of extension of electric service to "the 2 million unserved rural U.S. citizens."

Federal Government "recognition" of "the desirability of all Americans enjoying the benefits of abundant electricity at reasonable cost," and continuation of the government's making available "low cost power as necessary to accomplish this purpose."

In this election year it can be expected that more than the usual amount of political propaganda will be flying about. A good bit of it will be based on the subcommittee's ominous findings translated into a sales talk on what our government should be doing to keep the U.S. ahead of Russia in power production.

The report should be branded for what it is: a poorly camouflaged pitch for more public power.



Modern Data Processing Equipment Helps Lower Electric Rates in N. Y.

says Raymond A. Becker,
Elect. Utility Mgr., Ilion, N. Y.

CONVERSION to St. Lawrence River power is saving the Ilion, New York, Board of Light $63,000 a year, $40,000 of which is being passed along to consumers in the way of reduced rates, $13,000 set aside for future light plant expansion, and $10,000 a year applied to our capital account.

All of this might easily have been lost had it not been for the ready availability of modern data processing equipment which, in a matter of a few hours, enabled us to meet the stiff rate revision requirements of the contract for St. Lawrence River power—not only within the time limit imposed, but with a comfortable margin to spare.

Here's how it happened. After negotiating for two years with the Power Authority of New York State for the purchase of St. Lawrence River power, the Ilion Board of Light was suddenly notified early in 1959 that a contract had been approved and that the switchover would have to be made in no more than two weeks.

This created quite a situation for us. No particular technical problems were involved, for the facilities of Niagara Mohawk Power Corp., from which we had been purchasing Ilion's electricity, would continue to bring it to us from the new source. However, conversion to new and much lower consumer rates on the switchover date was mandatory under the contract.

Concerned in this were 6,000 individual rate changes, covering our three service classifications—general, residential, and rural—and affecting every one of our 3,659 customers.

Based on past experience (rates had last been reduced in 1942) this alone would take five clerk at least five or six weeks to complete. We needed a method that would reduce the time required from weeks to days or, if at all possible, even to hours. Otherwise, no low-cost St. Lawrence River power for Ilion.

The answer to our problem proved to be simple enough. The entire job was done by means of electronic data processing in a total of about six hours.

This accomplishment was well in keeping with the long-standing record of Ilion's municipal power organization, which had its inception in 1900, when the citizens voted for a $30,000 bond issue to cover the cost of installing their own electric utility plant for the generation and distribution of power. Despite the fact that, for many years, electric power rates in Ilion were second-lowest in the State of New York, this publicly-owned enterprise prospered from the day of its inception.

Since 1914 we have been able to make 11 rate reductions while at the same time keeping its physical plant, transmission network, etc., 100-percent up to date. Wise planning increased lighting plant value from $40,000 in 1914 to $652,919 in 1958. At the same time, total contributions to the Village have been well over $400,000. The Commission today has no debt service, and there is a comfortable reserve on deposit in the bank.

The rate revision requirement of our new St. Lawrence River power contract, however, was one to tax the ingenuity of any organization, whatever its past record and however efficient it might currently be. Ilion being a Village of only some 10,000 residents, its Municipal Government scarcely could be expected either to have or normally require in its operation anything as advanced as an electronic computer system. Yet, here was the need for something extra-special.

The specific need was to compute new gross, net, and discount rates covering each kilowatt hour of power up to 2,000 hours. Actually, this meant three complete sets of computations, as previously indicated.

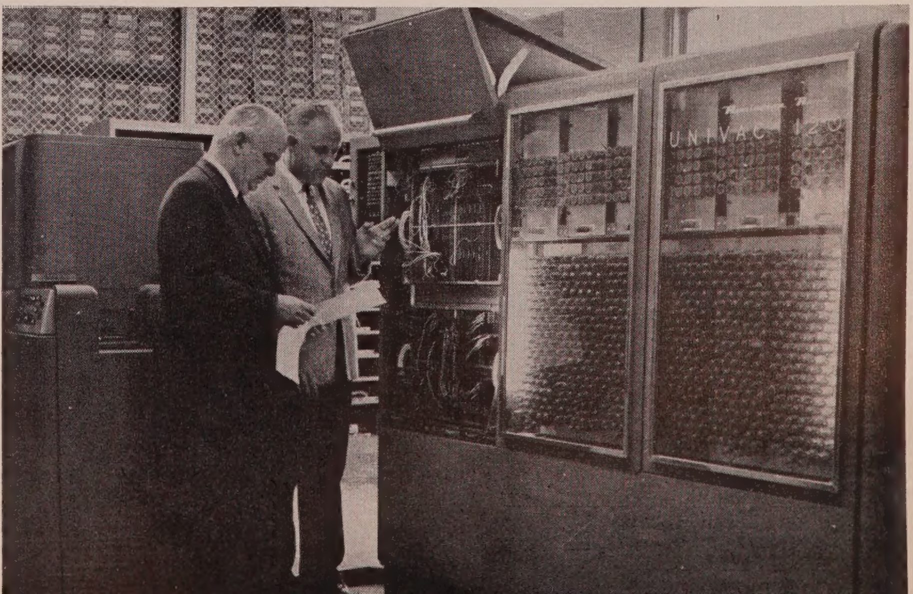
It was vitally important that all terms and conditions of the contract be set, for at stake was a three-mill per kwh saving to the Board, a large portion of which would be passed along to consumers to effect for them a 12 to 13-percent rate reduction.

A commission member suggested the possibility of using Remington Rand's Univac Service Center. A Univac 120 Punched-Card Electronic Computer along with qualified operating personnel, was available right at the Remington Rand plant in Ilion. Although such an arrangement was unusual, since the plant was not a service center, its computer could be used.

Plant computer system personnel surveyed our problem, then in about five hours time perfected a program covering its peculiar requirements. The actual revision of the 6,000 rates was completed wholly by the computer in about an hour's time, then a comprehensive listing of the new rates was printed.

Cost to the Village for doing this entire job was extremely low. A degree of absolute accuracy was achieved which could not possibly have been realized through the usual combination of desk machines and manual computation—even assuming the five weeks needed for the job were available.

Today, with economical St. Lawrence River power being delivered to consumers over our lines, Ilion residents enjoy the lowest electric rates in the State of New York . . . and the application of modern data processing equipment has been very prominent in achieving this goal.



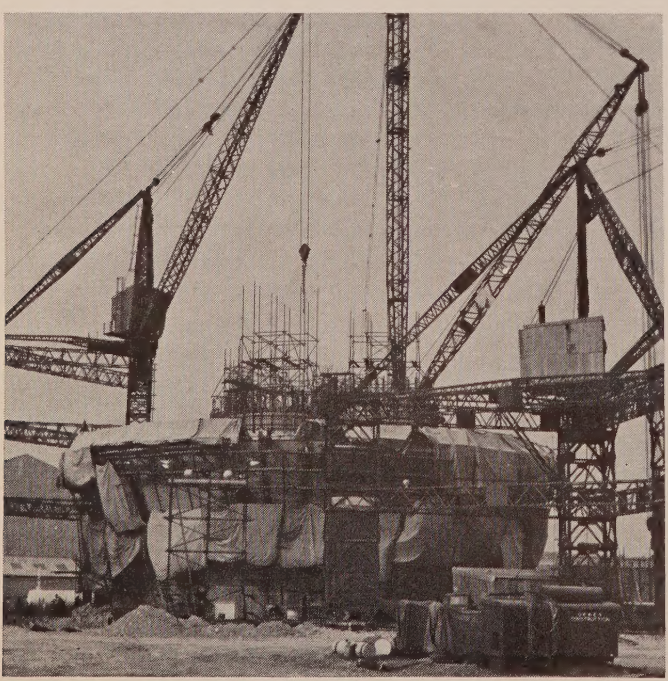
In an hour's time, this Remington Rand Univac 120 Punched-Card Electronic Computer converted 6000 electric power rates for the Ilion, N. Y., Board of Light.

NUCLEAR NEWS

NEWEST PROTOTYPE REACTORS on which the AEC invited proposals (late in December) will be built by the Commission, it has promised, in the event no acceptable proposals are received. Though no firm deadlines were fixed, approximate cutoff dates of May 1 for utilities and April 1 for manufacturers were noted in the announcements on the "Improved Cycle Boiling Water Reactor," and about the same amount of time to express interest in the organic-cooled and moderated prototype. Limited technical description in the AEC's announcement included the following:

THE ICBWR PROJECT is expected to provide information which might effect significant cost reductions in future large boiling water reactors. Improved design of the plant would eliminate physical complexity of the dual cycle system without sacrificing its advantages—capability of the reactor to respond in direct proportion to power demand, potential for increased power per unit volume of fuel, and applicability of these features to future large central station power reactors.

THE ORGANIC REACTOR would operate with forced convection cooling and would be designed to produce steam at 600-F. or higher. Use of improved fuel, such as uranium oxide clad with sintered aluminum powder, is expected to increase an allowable fuel surface temperature, to greatly increase fuel burnup, thus reducing cost of power.



U. S.—UK EXCHANGE of data on advanced gas-cooled reactors—a five-year agreement announced in November—will include information obtained from the British project at Windscale (above) and from the U. S. project at ORNL. Information is to be made available to private industry in both countries. Goal of the new UK project is to gain operating experience with a type of fuel-canning metal different from the Calder Hall type and working at a higher temperature.

SMALL NUCLEAR POWER PLANT proposals, received from five co-ops and public power organizations, were to have been considered along with proposals due Feb. 1 from manufacturers. Parties bidding on the 22,000-kw pressurized water reactor (with fossil-fueled superheater) included: the cities of Miamisburg, Ohio; Detroit, Mich.; Fort Pierce, Fla.; and Jamestown, N. Y.; and the Dairyland Power Cooperative, LaCrosse, Wis.

SECOND NATIONAL YOUTH CONFERENCE on the Atom is all set for Oct. in Chicago. Meetings will be concentrated in the Museum of Science and Industry, with optional field trips planned for Argonne National Laboratory, Dresden Nuclear Power Station and the University of Chicago.

Notes from an Editor's Visit to ORNL—

HOMOGENEOUS REACTOR TEST (HRT) has completed two years of operation, running about 10,000 of the 16,800 hours, at times for as long as 1500 hours continuously—longest of any reactor. Aim of the thorium-fueled reactor is to "breed." If slurry is used, operators expect to double fuel inventory in 10 years; if fuel loading is in form of solid thorium rods, doubling time may be from 25-30 years. (Control of slurry-fed operation depends on diluting or concentrating the uranium solution. Difficulty is, the entire plant is "hot," and equipment must be reached by remote-handling arrangements . . . and thorium must remain suspended in the slurry to avoid plugging of valves, etc.) Currently, costs of operating HRT run to about $6-million a year, including about $4-million for related research (like thorium blanket development) . . . and its operators consider this a "minimum" operating level.

ACCIDENTAL SHUTDOWN HAZARDS from escaping fission products are being calculated at ORNL, where such work is beginning now on power reactor fuel (UO_2). In "trying to put the finger on the extent of such hazards," scientists melt the UO_2 (at about 3000°C). In December they applied a new tool to accomplish this—an arc image (solar electric) furnace.

FISSION PRODUCTS PILOT PLANT, built at a cost of $3.5-million and operating since Aug., 1958, now produces a half-dozen radio isotopes for a growing commercial demand. Biggest seller today (passing Cobalt-60) is Cesium-137, being used widely in medicine (for teletherapy) and for industrial inspection processes. Of about $1-million a year in fission products sales from ORNL, 90 percent are Cobalt and Cesium. Pilot plant processes liquid wastes (from Oak Ridge or Idaho reactors), separates isotopic materials, sending Cesium chloride on to a fission products "cell" for further processing-baking, powderizing, pressing into pellet form, etc. For Cesium, ORNL is the world's only source. Big advantage: Ce has a half-life of about 30 years, compared to 5.3 years for Cobalt.

ECONOMIC REPORT

THE YEAR 1960 will be an excellent year for business. Easier money rates will prevail. Bank loans will be expanding as will the active money in the economy—demand deposits plus money in circulation. Congress will give its support to spending programs—for defense and for domestic housing.

With the threat of strikes in 1960 largely removed, business optimism in 1960 will be at a high level, and business plans for current growth and future expansion will be made with supreme confidence in the future.—A. C. Farmer

by A. C. FARMER
Economic Consultant

An Economic Forecast for 1960 . . . and the Years Ahead

In the next four years the long-term trend in business activity will be upward and can be expected to develop as follows:

OSCILLATIONS WILL OCCUR as a result of periodic efforts by the Federal Reserve Bank to slow up debt expansion and prevent runaway price inflation by tighter credit restrictions.

BUSINESS ACTIVITY WILL SPRING BACK after each economic setback, as additional money, as a restorative, is provided through government agencies.

NO SERIOUS BUSINESS UPSET will be possible until after 1963, when a serious economic crisis will occur.

FOR THE ECONOMIC CRISIS that develops after 1963, monetary inflation (via the printing press) will be provided by the government on an enormous scale to offset a ruinous deflation that otherwise would run its course just as it did in 1929-1934.

NO DEPRESSION similar to 1929-1934 will be permitted to occur.

A SHARP REDUCTION in the purchasing power of the dollar will be the end result.

The reasons for the above conclusions most easily can be explained by the use of the questions and answers which follow:

QUESTION—Why do you conclude that the economy will follow an upturn for the next four years?

ANSWER—Since the end of World War II, we have had an economy supported entirely by an expanding debt. Debt can and will continue to expand for another four years before a situation that is dangerous to the economy can develop. Therefore, business activity will continue to grow and expand for another four years.

QUESTION—Why do you conclude that the expansion of debt cannot continue for more than four years without resulting in an upset?

ANSWER—The amount of debt that safely can be incurred is not an absolute amount—it is a relative amount—and the amount of debt becomes dangerous only when it is too large in comparison with the funds available to pay off the obligations.

One index for comparison is the total volume of bank loans at all commercial banks in comparison with the total volume of demand deposits (adjusted). Whenever the ratio of bank loans to demand deposits exceeds unity, the economic situation is quite dangerous—and by 1963 this ratio will be considerably in excess of 1.

Another index for comparison is the ratio of total private debt to total deposits plus currency. The critical ratio is 2, and above 2 the economic situation is quite hazardous—and by 1963 this ratio will exceed 3.

It is quite improbable that a stable economic situation will continue after these ratios have been exceeded.

There is, however, one qualification. The 1957-58 business setback delayed debt expansion in 1958 and postponed the ultimate crisis from 1963 to 1964. Similar severe intermediate setbacks could have the same effect.

QUESTION—Why do you assume that debt must continue to expand over the next four years?

ANSWER—Because with present national economic policies, an expanding debt is necessary to support an expanding business activity and to provide increasing employment. The political leaders—the business leaders and the public at large—all are unwilling to accept the discipline that is an imperative in any program that may be set up to deal with the problem of controlling the expansion of debt.

For example, the reinstatement of Regulations W and X would limit the expansion of public debt but also would place a temporary restriction on the total volume of business that today could be transacted. This has no appeal for politicians—for business—for industry—or for the public.

QUESTION—It is your conclusion, therefore, that political aspirations and the resultant political pressures plus business aspirations and the resultant business pressures both will operate so as to make inflation in the years ahead a certainty—one consequence of which will be a serious economic collapse after 1963?

ANSWER—This is a very exact statement of the situation as it now appears. In the meantime, four years of good business still lie ahead.

Inspecting drawing on tracing cloth before picture is taken by camera unit. Drawing is locked down in easel and camera is in position ready to "shoot." Entire camera assembly moves easily on four-wheel base trolley.

HOW UTILITY SOLVED GRAPHIC INFORMATION HANDLING PROBLEMS

By GEORGE E. DANA
Assistant Chief Electrical Engineer
New York State Electric & Gas Corp.

Graphic information handling system saves utility $12,000 annually. New additional application areas opened considerably increase efficiency of operation.

A NEW SYSTEM of graphic information handling has saved the New York State Electric & Gas Corp. almost $12,000 a year. In addition, it has opened new areas of application which have considerably increased the efficiency and value of its graphic information handling operation.

Savings have been realized in every area. The greatest, in the replacement of sepias and worn tracings, involving about 2600 copies a year, cut costs by $9104. Savings also resulted by: keeping the protection file up to date; copying approximately 500 drawings required annually for transmission, distribution and underground standard books; photographing tracings used in switchboard and control work which previously had been supplied by manufacturers; and reproducing maps and steel detailing forms.

Maintaining Records

Because of the requirements of maintaining records for considerable periods of time, the company had been plagued for years with a number of problems. Many of its sepia tracings began to deteriorate after only two years. Paper tracings had always proved troublesome because they became dog-eared and tore easily. In addition, drawings made with pencil tended to smudge.

But it was not until the destruction and damage of a large number of drawings and tracings in the storage area that company officials decided to institute a program of restoration and replacement. Implementation of this project, however, was no simple matter.

Initially an attempt was made to replace the damaged records by redrawing the old tracings, but so much time was consumed in this work that it was impossible to keep up with current activity. The next step was to have outside sources reproduce tracings and drawings on 4 by 5-in. negatives. Two negatives of each tracing were placed in envelopes and filed. One set was stored in the drafting room and the other near the clerical offices.

Cut Costs Further

After a few years, however, it was felt that costs and storage space could be cut still further by installation of a system that could be more rigidly controlled from start to finish by the utility's own staff. It was decided to consult the Photostat Corporation, makers and distributors of photocopying, offset duplicators and microfilming equipment and supplies.

This firm's recommendation was a "Statfile"-70-mm recorder system. It consists of a camera with an electrically-operated shutter; a film magazine that accommodates a spool of 70-mm film 100 ft long; a projector unit comprising a specially-computed condenser lens system with low-voltage illuminant for extremely fine definition; a magnetic counter above the control panel for convenient viewing; an easel frame that turns on central bearings, and a four-wheel base trolley that carries the complete camera assembly.

Cost of this entire system, which included all necessary equipment from darkroom tanks for processing projection paper and cloth, to film-drying cabinets and a densitometer for measuring film density, amounted to $13,371, including installation and overhead. However, the return on this investment has more than fulfilled expectations.

How System Is Used

This recorder system is being utilized for the following purposes:

- As a protection file for all engineering drawings.
- To eliminate sepias and torn trac-

ings and replace them with new originals for the drawing files.

- To provide reductions or enlargements of tracings for transmission, distribution and underground standards.
- To supply copies of drawings provided by manufacturers.
- To reproduce maps and steel detail forms.
- To permit use of pencil on paper instead of the more expensive ink on cloth in making original drawings.

In addition, the system was put to these entirely new uses:

- Reproduction of photographs.
- Projection of drawings on screens for use in engineering meetings, lectures and detail studies.
- Production of reduced size transmission line record books.

Previously, lack of drafting time had prevented the company from making all of its original drawings on cloth with ink. Some 500 of the approximately 600 drawings a year had to be made with pencil on paper. Since the recorder can reproduce drawings on projection photographic cloth, all original drawings can now be made with pencil on paper. Savings in time can be estimated from the fact that pencil-on-paper drawings take an average of 16 hr each, compared with 24 hr for each ink-on-cloth drawing.

Transmission Record Books

In the area of new services, substantial savings were achieved in processing reductions for transmission line record books. These books contain profile drawings of transmission lines. The top half contains a graph to indicate the height of the line; the bottom half shows the plane plan of the line. Since each sheet designates a mile of transmission line, it is of necessity rather large. Pre-arranged or pre-drawn on a tracing before going out to the field construction crews, each sheet must be reduced to 11 by 17 in. in order to fit into the transmission line record book.

Other advantages that have resulted from the new system were: ease and economy of storage, quicker access, and quality of reproduction.

Previously, active files had been maintained in two offices. These were consolidated in the originating office while positive transparencies were sent to the Ithaca office where they are kept in a vault for security.

In the previous installation, 4 by 5-in. negatives of drawings and tracings had been inserted in envelopes and placed in a drawer 18 in. deep. Each drawer accommodated 600 envelopes.

Storing Films

Using the new 70-mm film filing cabinet, it is possible to store 4,480 envelopes with 2¾ by 4-in. negatives in a single drawer 20 in. deep. Because of the utility's particular needs, however, it was found advisable to store the film in rolls in their original containers. Therefore it was possible to retain the old storage cabinets, even though the new cabinet would hold 15 containers per drawer as compared with the nine in the old 18-in. compartments.

Each roll of 100-ft. film contains 300 frames. This means that each 18-in. drawer will now hold 2,700 frames of 70-mm negatives, compared with the 600 negatives under the previous system.

Each container of roll film is labeled and every drawing in the roll is listed in numerical order in a cross reference book. Whenever copies are required, it is only a matter of minutes to find the frame desired by using a hand reeler on the camera.

Enlargements

Quality played an important part in the decision to install at 70-mm system. Numerous preliminary tests of tracings of various sizes proved the accuracy of detail and lack of distortion in blowbacks.

With the 70-mm film, excellent enlargements of original tracings, on either cloth, paper or foil, can be made up to 40 by 60 in. It also is possible with the recorder to put drawings or original tracings of up to 40 by 60 in. on 70-mm film.

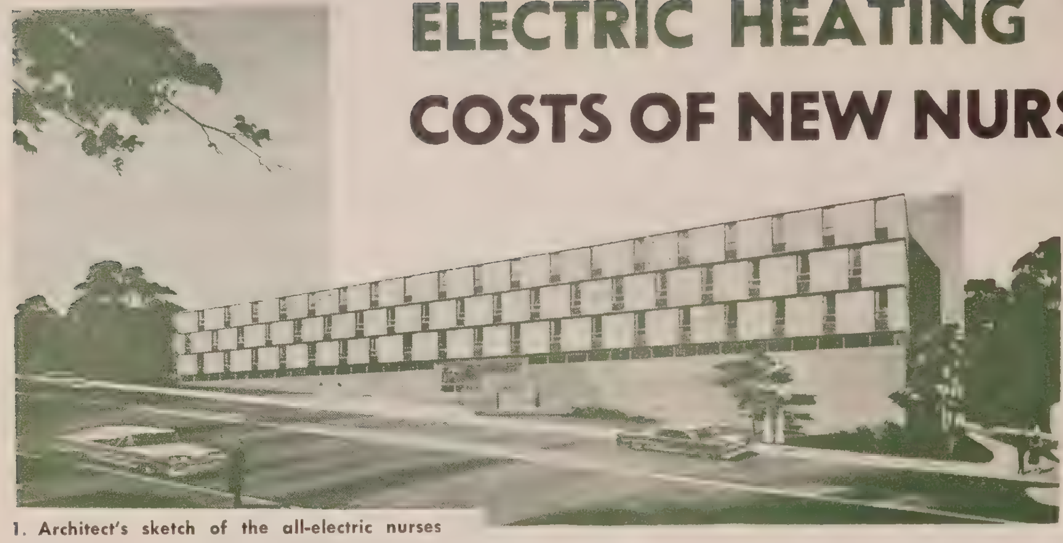
An interesting fact uncovered was the improvement in appearance of drawings made in the paper reproduction of the film. In some cases drawings that had been considered unusable in the original were actually restored through the intermediate of this 70-mm microfilm system.

Because this installation has made it

(Continued on page 49)

Operator dries completed blow-back on photographic paper. Behind her, at left, are tanks in which photographic papers and cloth are developed. Operator is removing excess wash water from print prior to placing it in electric drum dryer.

Checking completed roll of negative film on film inspection unit. Front panel of unit is set at viewing angle of 45 deg and the two spindles enable operator to pass a 100-ft length of film in either direction of flashed opal glass window which is lighted by 40-w lamp.



1. Architect's sketch of the all-electric nurses dormitory to be added to the Methodist Hospital of Central Illinois. Completion is scheduled for September 1960.

ELECTRIC HEATING WILL CUT COSTS OF NEW NURSES HOME

By
JOHN HACKLER
and
JOHN LEE,
Foley/Hackler/Thompson/Lee: Architects
Peoria, Illinois

Heating system costs will be nearly halved by choosing electricity instead of oil, it is estimated, and planned future expansion will add to savings. Added to existing hospital service, increased load, in effect, will be billed at low-block rate.

THE DECISION to use electricity instead of oil for heating the new four-story nurses dormitory to be added to the Methodist Hospital of Central Illinois, at Peoria, will save an estimated $37,000 in installation costs and about $97 per year in fuel. The electrical system, to consist of heat pump, for both heating and cooling of first-floor reception and lounge areas, and electric-heating wall panels with individual room controls on upper floors, will cost $41,000. Cost of a comparable system consisting of oil burner, boiler, pipes, radiators and individual room controls, plus a conventional air conditioning system for the first floor, would be $78,000.

Individual room heat controls were specified in requirements so that nurses rotating on 24-hour duty can have heat at any time they want it.

Adding to ultimate cost differential of the two systems is the cost of later expanding the heating system to provide individual-room-controlled service for fifth and sixth floors. This eventuality, of course, would mean that an oil heating system capable of adequately serving the two additional floors would have to be installed when the dormitory is built.

Design and Construction

The "lift-slab" method of construction will be employed to build the dormitory. In this method one floor slab is poured on top of the other then jacked up into position on steel columns. Besides saving on labor costs, this method produces an extremely smooth surface on the underside of each floor slab. These form ceilings which can be finished merely by painting them.

The dormitory exterior will have a granite slab curtain wall. Each slab will be 8½ ft square and four inches thick. Aluminum-framed windows will be set between these slabs.

Sidewalls will be insulated with two inches of sprayed asbestos over the granite slabs. The roof will have three inches of rigid fiber board above a nine-inch-thick concrete slab.

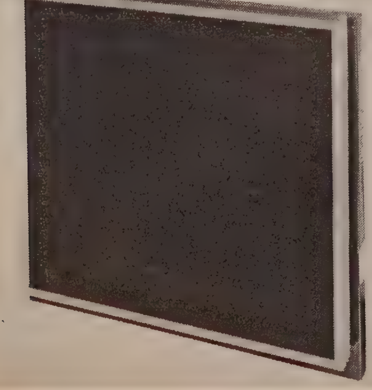
In addition to reception and lounge areas, the dormitory will contain 72 double rooms and 36 single rooms. Each floor will have a centrally-located utility core consisting of lavatories, shower and bathing facilities, toilets, and a small personal laundry room.

The window recess in each room will extend from floor to ceiling and will be about three feet wide. The upper section of sash will be operable for cleaning only. The center section will be designed to open and close for ventilation purposes. The bottom section will be stationary and contain the electric-heating panels mounted on insulated pans.

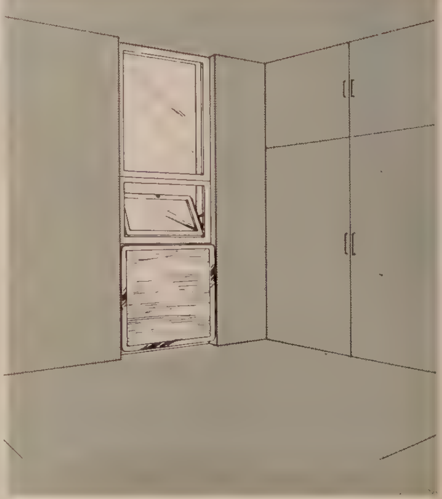
On the building's exterior, heat-strengthened colored glass will cover

(Continued on page 61)

3. Heating panels will be faced with aluminum-framed plastic laminate to match room furnishings, and mounted on insulated metal pans.



2. Detail of typical dormitory room shows position of flush-mounted heating panel in three-part window frame.



Prestressed Concrete Tower For Project EHV

A prestressed concrete tower—about 115-ft. high and 92-ft. wide—will be tested in Project EHV. The tower, supplied by the Prestressed Concrete Institute, will be located in the southern portion of the 4.5-mile super-voltage, experimental transmission line being built by General Electric and nine co-operating companies at a site near Pittsfield, Mass. Its conductors will be energized at voltages from 460 to 750 kv.

According to Norman Scott of the Institute, the installation represents an excellent opportunity to assess the advantages of using concrete in the construction of large transmission towers. He cited low initial cost and freedom from maintenance as being typical features offered by concrete.

To Try Wild-Life Planting On R/W

Alabama Power will soon be experimenting with wildlife planting along some of its rights-of-way. An area of about seven acres of a transmission line right-of-way near Birmingham was recently cleared for a test planting of wild-life feed.

At the appropriate time—probably in March—bicolor lespedeza, Kobe lespedeza, and partridge peas will be planted to provide feed for quail and other seed eating birds and animals.

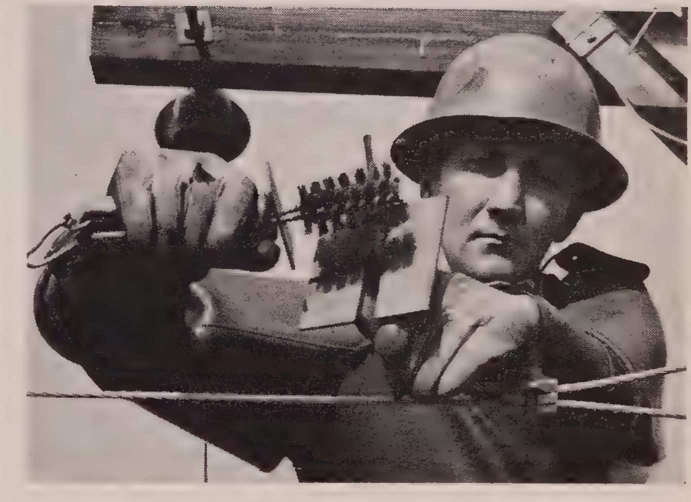
The project is being carried out to determine the feasibility of using the R/W for this purpose by landowners as well as for harvest crops, pasture, etc.

Demand Register Tester Works Quickly

A demand register tester which promises to reduce by two-thirds the manhours presently required to test power demand registers, has been invented by Pacific Power & Light Meter Foreman Wayne Hunter. Journeyman Meterman Bill Barnett built the tester.

The machine is equipped to test efficiently ten demand registers at a time, with a complete change to a new set of registers possible after a half hour. Said Mr. Hunter, "Now one man can handle 45 instruments in a day and is free to devote his time to other duties once the registers are attached to the tester. It's only necessary to check the results at half-hour intervals rather than focusing your undivided attention on the registers as the old method required."

Previously it took one and a quarter man years to test all of PP&L's 4500 registers. With Mr. Hunter's development of the new tester, the job can be done in less than six months, making the meter specialist who tends the tester available for other duties and saving many manhours of tedious and sometimes boring work.



Hand And Brush Guards Lessen Hazards

To keep wire brushes from piercing rubber gloves on conductor-cleaning work, two Consumers Power operating men collaborated in developing hand and brush guards. While wire-brushing an energized conductor is normally a routine job, the brush bristles can pierce the rubber glove without the lineman's knowledge.

Two Masonite presswood guards were developed by Warren T. Stolicker, lineman-in-charge, Lansing Division, and Elwin R. Wiley, building utility man A in charge of the Electric Distribution Tool room. One guard fits over the conductor to shield the hand from the brush. The other is drilled to fit the brush, also shielding the hand from the brush wires.

Both guards are also practical for use during greasing operations because they help keep linemen's gloves clean.

Water Deflector Wall Is 250-ft Long

Intake and outfall water for a recently-completed screen house at Philip Sporn station (jointly owned by Appalachian Power and Ohio Power) will be separated by a deflector wall which will prevent the outfall discharge from being sucked back into the intake. The structure, which will be more than 250-ft. long, will consist of three steel sheet pile cells and four connecting Z-pile sections. The sections at either end of the wall will be anchored to existing cells. All Z-pile will be reinforced with structural steel wale.

Each of the new cells will be 16-ft. in diameter, filled with sand and gravel and capped with concrete. They will be driven to rock and will extend 16 ft. above normal river level. The wall is being constructed by Dravo Corp.

TELEMETRY TOOL PROBES AUDIBLE NOISE FROM 345-kv LINE

By JAMES J. RATKOWSKI,
Engineering Assistant
Commonwealth Edison Company
and ROBERT A. EUCKER,
Senior Engineer
Technical Service Section
Preformed Line Products Company

For the first time, valid vibration and strain data was successfully transmitted by radio link through the electric field of an operating 345-kv utilities line to a ground receiver-recorder.

INVESTIGATION of an audible noise from a 345-kv tower line on the Commonwealth Edison system last February marked a measurement milestone and provided valuable vibration data.

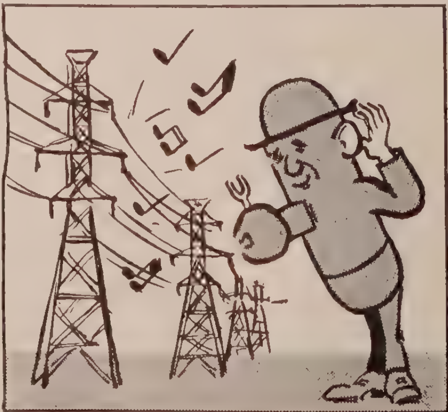
The investigation was sparked by an observation that a noise was clearly audible for several hundred feet each side of the line "when the wind blew right." Possibility that excessive vibration existed in the conductors or static wire caused some concern since 345-kv line tensions are higher than tensions previously used on the company's 138- and 220-kv lines. Maximum line tension is 16,400 lbs for each of the six 1.75-inch expanded phase conductor cables, and 7,240 lbs for each of the two 159-mcm, 12/7 ACSR overhead ground wires.

The problem: To correlate any mechanical vibration to the noise phenomenon.

Ran Preliminary Tests

Conclusions of several noise-determining tests by Edison included the following:

1. Wind velocities, across the line, of approximately 15 mph were necessary to produce the noise.
2. The tower, itself, was not the source of the noise.
3. The noise frequency was approximately 160 cps with winds of approximately 15 mph.
4. Based on generally accepted methods of determining wire vibration frequency from wind velocity and wire diameter, the static wire was more likely to vibrate at the noise frequency than the conductor.



Use Telemetry

But, further information was sought. On February 17, Preformed Line Products Company field-service engineers moved their vibration study equipment to the site and proved that vibration information could be reliably transmitted, received and recorded, even though the transmitter was in the strong electric field of the 345-kv conductors.

The telemetry system consists of two parts: A battery-powered transmitter and transducer; and a telemetry receiving station located in a vehicle stationed near the line.

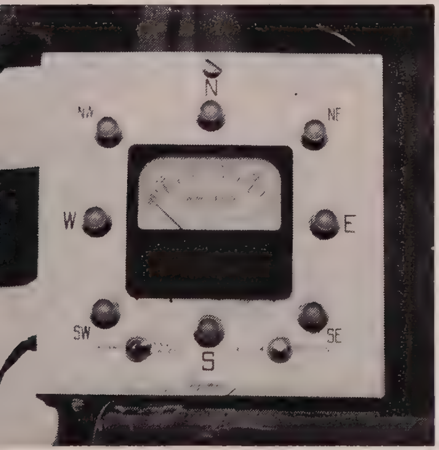
In use, the transmitter can be fastened securely to the tower or wire. A Statham strain gage accelerometer modulates the transmitter output, producing an FM/FM signal which is transmitted to the ground.

The receiving facility consists of two telemetry receivers and a dual-channel recording oscillograph, permitting transduced measurements on two lines simultaneously. In addition, line vibrations may be observed on an oscilloscope, or with a modulated audio note.

A cold, windy day was picked by the test rew as being most favorable for vibration tudies on Commonwealth Edison's noisy 345-kv line. Loop antenna on station wagon picks up FM vibration signals.

On the morning of the test, the vibraion receiving and recording equipment vas set up in the rear of Preformed's tation wagon, which was located over 100 yards from the tower. A portable 110-v gasoline-powered generator fed he receiving and recording instruments. Devices to record wind direcion, velocity, and temperature were lso set up.

Since the transmitter and vibrationensing unit (accelerometer) weighed nly a few pounds, the linemen had ittle difficulty in getting them up the ower. Similarly, the installation of the ransmitter was relatively simple. It vas taped to the tower near the static vire attachment point, and the 1-03 ccelerometer was taped to the static vire several inches from the end of the rmor rods.

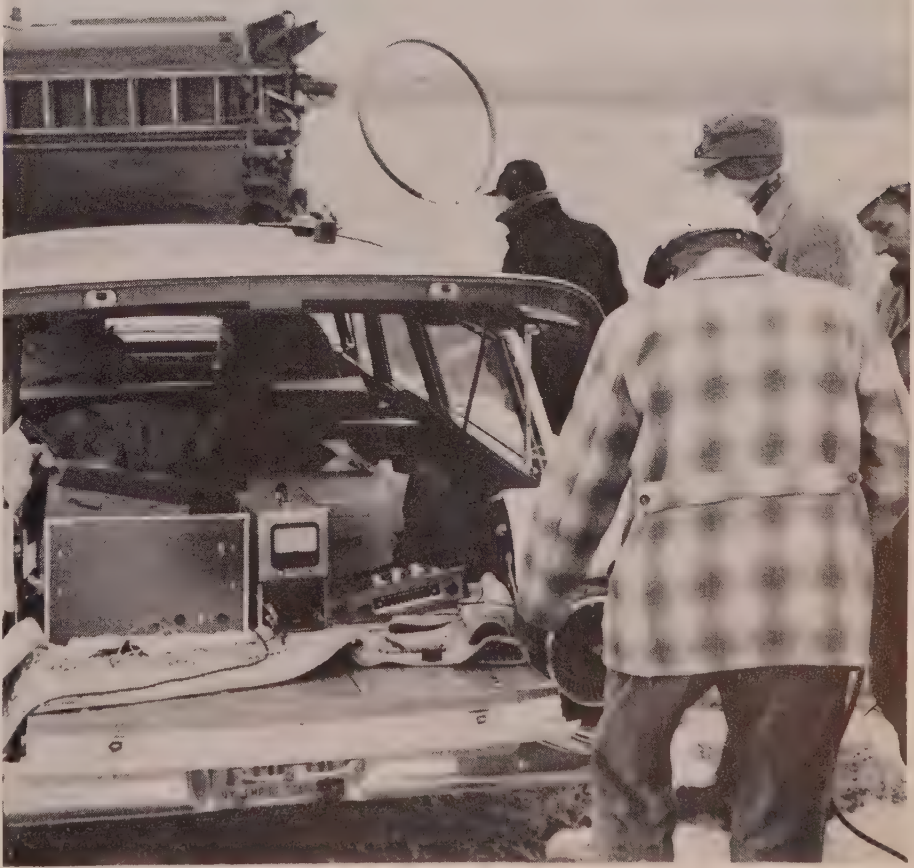


ndicating anemometer mounted on line truck letects ground level wind direction and veocity.

Starts Instantly

The Brush Recorder, which was onnected to the FM receiver, began ecording as soon as the transmitter witch was thrown at the top of the ower. The fact that one circuit of the ower line was energized at 345 kv pparently made little or no difference n the transmission of the vibration nformation.

Based on observation made during he test and on reports of the successful ransmission of vibration information rom energized high voltage lines in a aboratory, there is little doubt of the



The telemetry receiving-recording station is eadied as linemen prepare to climb the tower under test. A recording oscillograph and magnetic tape recorder, fed by the FM receiver at right, stand by to record the data.

Lineman removes Stockbridge damper from static wire so that vibration indications and damper evaluations might be made. Transducer was taped on the static wire just beyond the end of armor rods.

ability of the unit to transmit directly from energized conductors. Furthermore, it is conceivable that the unit could be installed with hot-line tools.

The morning's tests yielded no vibration-noise correlative data because the wind wasn't blowing hard enough. However, in the afternoon the wind velocity increased and the noise under investigation was heard with a NE wind of 10 mph by everyone on the test location. The noise ceased, when the NE wind slowed to 6-8 mph.

During the noisy condition, the vibration detection equipment indicated no appreciable change in the static wire vibration.

The noise was apparently caused by the wind passing over the six large conductors (which provide a relatively large eddy shedding area), and was not mechanically induced. It is believed that the air movement caused the noise much in the same manner as a protruding object whistles on a moving automobile. The noise has not appeared on other Edison lines probably because their conductors are much smaller in diameter.

Recorder Chart Analysis

An analysis was made of the Brush record which was taken at the time of the noise. Knowing the speed of the recorder chart and the calibration of the accelerometer, the Preformed field-service engineers calculated static wire frequency and amplitude of vibration. The chart analysis indicated that the static wire vibration frequency was 78 to 82 cps—approximately the frequency which would be normally expected with the existing wind velocity and wire diameter. Furthermore, the indicated vibration was so low that the static wire was experiencing only mi dynamic stresses. At 10-12 mph wi vibration damper removed and line noisy, the amplitude was ±0.0006 in.

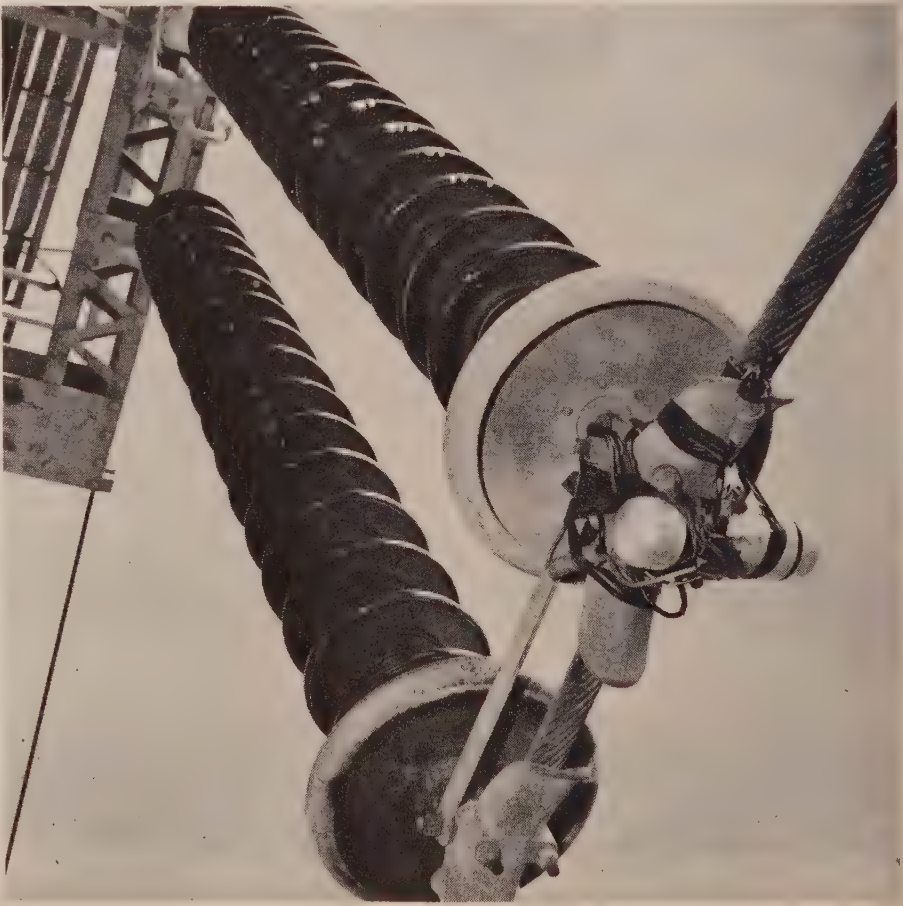
While no measurements were taken of the phase conductors, it is believed that very little vibration existed in them, since measurements of tower response—which normally accompanies conductor vibration—showed negligible vibration.

Linemen Check Out Record

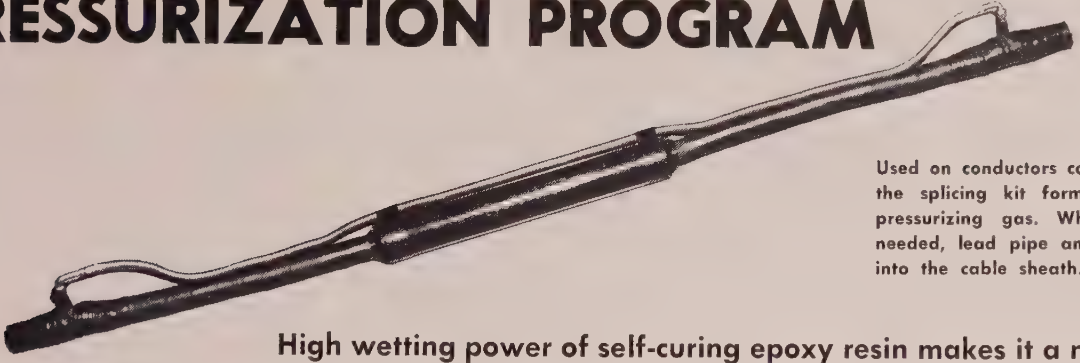
There was excellent agreement between the recorded results and the observations of the linemen on the tower. With the wide range of wind velocities encountered it was possible for the linemen to call down perceptible changes in the static wire vibration. These were invariably confirmed by the recording equipment. The men on the tower also reported that the source of the noise could not be definitely located.

In the light of the excellent test results, no further testing was planned, and the vibration protection installed on the line is considered adequate.

Relatively small size of transmitter is shown in this testing installation on the tower line of another utility. Here, the transmitter is taped direcly beneath the insulator cable shoe. Strain gage—which modulates the transmitter's oscillator bridge—is taped to the armor rods inside the shoe. On Edison's noisy conductor test, the transmitter was taped to the tower, while the strain gage was taped to the static wire being measured.



EPOXY GAS BLOCKS SIMPLIFY CABLE PRESSURIZATION PROGRAM



Used on conductors containing 51 pair or less, the splicing kit forms a complete dam for pressurizing gas. Where a gas by-pass is needed, lead pipe and tire valves are taped into the cable sheath.

High wetting power of self-curing epoxy resin makes it a natural for gas dams and blocks in pressurized communication cable.

A SELF-CURING EPOXY resin normally used as a splice insulation, has been adapted to form gas dams and blocks in a pressurizing program on the 317 miles of the Los Angeles Department of Water and Power's telephone and control cable system.

Placing the existing system of plastic and lead-sheathed cable under pressurized nitrogen to prevent moisture entering the cables required a simple blocking method that would provide a completely gas-tight seal. It also had to provide electrical insulation where splices were placed in the system.

Epoxy casting resins were chosen because their high wetting power allowed them to penetrate all interstices for a gas-tight seal, and because of their insulation value. A single-use, two-halve, plastic mold and a mixed-in-the-package, two-part resin were used at the proper points in the communications line.

Partly underground and partly aerial, cables in this system range in size from six-pair to 152-pair. The system is used for telephone communication between the Department's dispatching offices, generating stations, substations, reservoirs, pumping plants and other facilities, as well as for telemetering equipment, and control devices.

For cables containing 51 pair or less, "Scotchcast" splicing kits, series 82-A, were used. For cables over 51 pair, a set of clear plastic molds, made by the Department (EL&P, June 15, 1959, page 56) were used.

The clear plastic molds were made in two parts to fit around the cable. The inside of both parts was coated with a silicone grease mold-release before the halves were taped around the cable. The mold could then be re-used.

After selecting the proper point for a gas dam, the sheath was opened and the conductors "ballooned." For cables under 51 pair, the proper sized splicing kit with its single-use mold was applied. First the two-piece mold was snapped into place around the cable and the pouring spouts inserted in either end. Then the resin in the "Unipak" container was prepared by breaking the seal between the two halves of the plastic bag and the resin and catalyst mixed together by squeezing alternate ends of the bag 40 or 50 times.

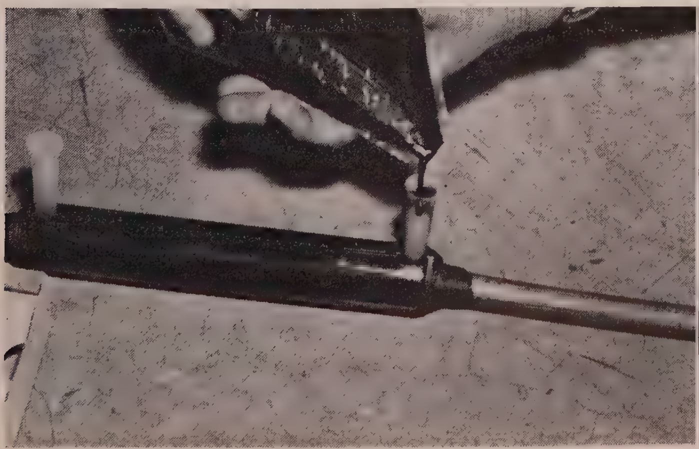
When the resin was properly mixed, the corner of the bag was cut off and the resin poured into one of the pouring spouts, allowing air in the mold to escape through the other. Resin was poured until it appeared in the other spout.

Cables having more than 51 pair were dammed by placing the clear plastic molds around the opening after the mold had been liberally greased. The mixed resin was poured until the clear mold was seen to be full.

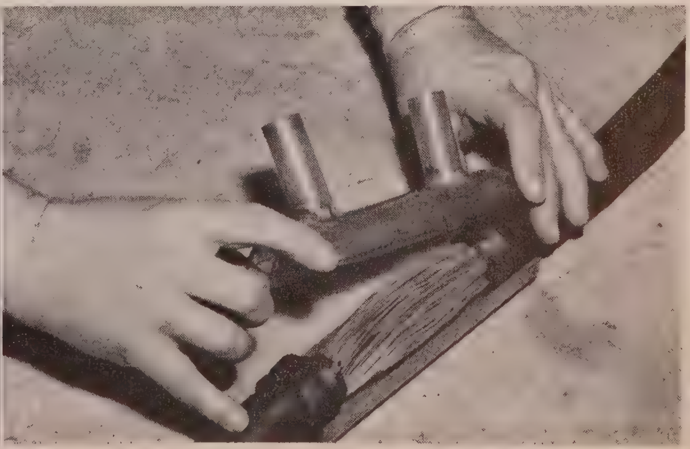
The resin cures under heat generated through chemical action within the resin. Just prior to curing or "kicking over," it is about the consistency of water, thoroughly wetting everything it touches.

Where electrical splices were made that were not needed as gas blocks, the gas was by-passed around the resin-filled splice by taping ordinary tire valves in place over a hold in the sheath with "Scotch" No. 33 plastic electrical tape. A lead pipe was attached to the tire valves, allowing the gas to go around the resin block.

With ends of mold taped to prevent leakage, "Unipak" is prepared by breaking a divider seal between its two compartments and mixing the resin and its catalyst. Then the resin is poured into the mold as shown.



For cables containing more than 51 pair, a Department-made mold of clear plastic is used. It is coated with silicone grease before pouring, to allow the mold to be removed and re-used.



WIDE, STRAIGHT TRANSMISSION R/w IS OFTEN THE LEAST COSTLY

By FRANK W. SHAW,
Engineer
Kansas City Power & Light Company

Costs of shorter spans and angle structures frequently exceed costs of near-straight R/w having adequate long-span lateral clearance.

HIGHER VOLTAGE transmission lines today require wide conductor spacing and proportionately greater clearance. In a measure this is controlled by stringing the larger conductors at high tensions over long spans to cut down number and height of structures. However, r/w should be wide enough to give adequate clearance between conductors in extreme high-wind position and any objects at the edge of the r/w on property beyond the control of the utility.

In high winds, long-span conductors swing transversely for a considerable distance and side clearance should be adequate to avoid later difficulties and expense of altering or relocating. Once in service, de-energizing such lines long enough to make changes becomes a major problem. Sufficient clearance is also essential to avoid flashover to trees, buildings, pole lines and other objects adjacent to the r/w, hazards that are not too evident when conductors are in their "no-wind" position.

Width of right-of-way must be decided before the survey is made and before maximum span lengths suitable to the terrain can be determined. Because of lack of good locations for structures or peculiarities of areas to be spanned, it is difficult to determine span lengths before the survey. As a result, after the survey is completed and the line is "graded in," it will be found in some places where spans are short that full r/w width is not required. In other locations where spans are long, r/w may not be as wide as it should be for proper clearance protection.

Matter of Costs

Sometimes there is a tendency to reduce r/w width to keep costs down. Resulting shorter spans, however, increase line costs, tending to offset r/w savings unless r/w cost is very high. There are a good many transactions of record which indicate that r/w of adequate width costs very little more than a narrower one. For, r/w cost is not based on area alone; it carries a stiff fee for nuisance value and sometimes fear.

Rule of Thumb

A rather simple rule is to consider that poles, wires, buildings or any objects not a part of the transmission line should clear conductors in "high-wind" position by a distance equal to phase spacing of the transmission line. Greater or lesser clearances can then be applied for special cases according to rules that apply or code requirements.

Fig. 1 showing a tangent structure with swing of conductor for various span lengths, illustrates a simple method of determining r/w requirements for a particular conductor and conductor sag.

While lines will operate without trouble where clearances are considerably less than phase spacing or clearances required by Code, even clearances require safety factors in them. Poles may lean, conductors may have more sag than expected and swing farther than expected in high gusty winds. Added to these, trees grow and cut into clearance safety factors. Further, to knowingly disregard Code requirements would put a utility in a bad light in the event of a law suit.

Why Go Straight?

Most deviations in the route for a transmission line after it has been selected increase costs to an extent that paying more for r/w, to avoid making the change, may be justified. This is particularly true if other than very small angles are involved. This shows up in Table I which gives increase in cost of angle structures over tangent H-fixtures on a 161-kv line using 75-ft class-one poles (1959 prices with overheads).

Editor's Note—This is an adaptation of a paper presented by the author at the 1959 Engineering Conference of the Missouri Valley Electric Association.

TABLE I

Installed-Cost Comparison of 161-KV Tangent and Angle Structures

Structure Type (KCP&L Co. Designation)	Line angle degrees	Installed Cost	Excess above cost of tangent structure
HXL	Tangent	$1275.00	$ .00
HXVL	0-1	1320.00	45.00
HAL	1-3	1450.00	175.00
3AX1	3-5	2125.00	850.00
3AG3	5-12	2390.00	1115.00
3AG4	12-20	2535.00	1260.00
3AG4B	20-35	2540.00	1265.00
3AD17′	35-45	4210.00	2935.00
3AD18′	45-60	4225.00	2950.00
3AD20′	60-75	4410.00	3135.00
3AD22′	75-90	4430.00	3155.00

Excess cost of angle structures over cost of tangent or straight-line structures not only implies avoidance of large angles, it also suggests that economies may be realized by shifting the line for a greater distance in order to use only small angles. A decision to put sizable angles in a line to keep off a particular piece of property can seldom be justified except for reasons other than dollars and cents.

In rural territories away from high-priced, potentially-suburban property the most economical route is one that goes straight across country, swinging only enough to miss houses and difficult terrain. This is particularly true when the direct route lies at 45 degrees with property lines. For every 10 miles across country on such a route, distance around parallel to property lines would be approximately 14 miles. Saving the cost of four miles of line out of every 14 miles would pay for a lot of right-of-way, and saving in line losses over a period of years would be appreciable.

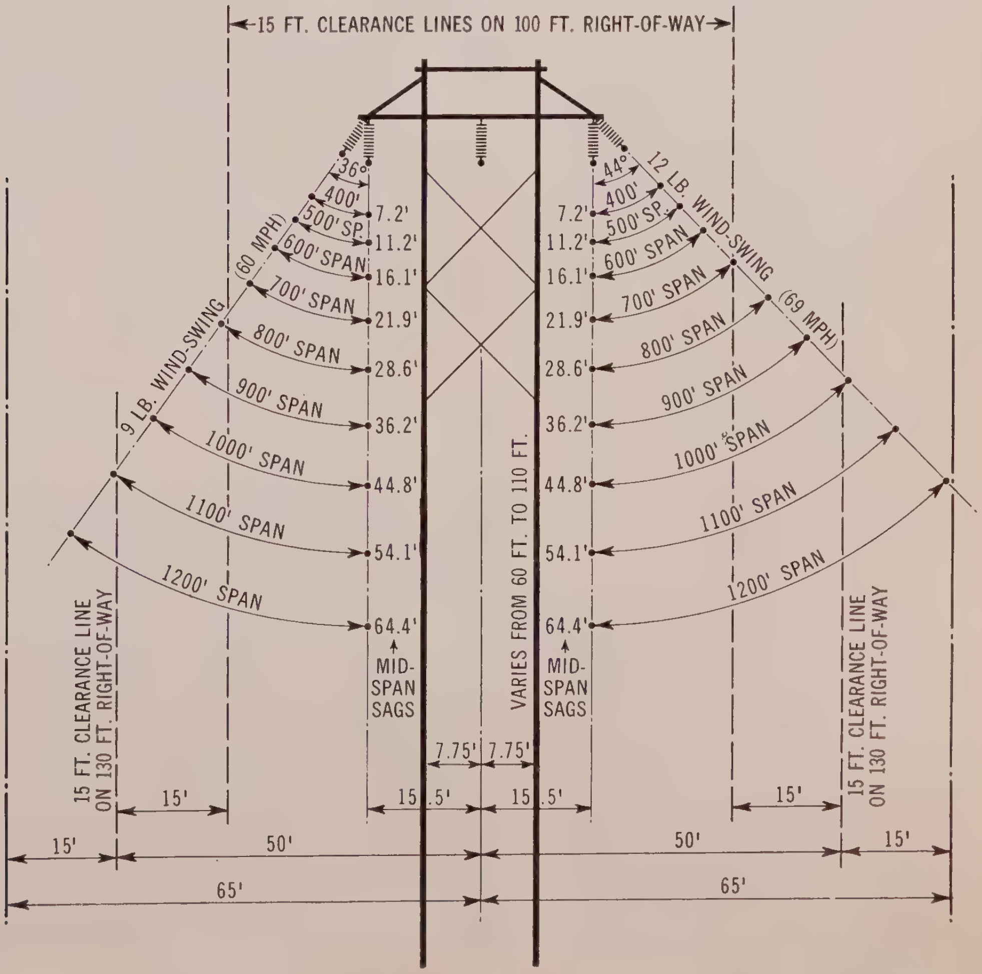


Fig. 1—Conductor swing and right-of-way required for 161-kv wood pole H-frame structure line, 1192.5 mcm ACSR at 9500 lb max tension, 100-deg F final sag, in 60 and 69 mph winds.

UTILITYMAN'S NOTEBOOK

AN EASY WAY TO TRANSFER HEAVY CONDUCTORS

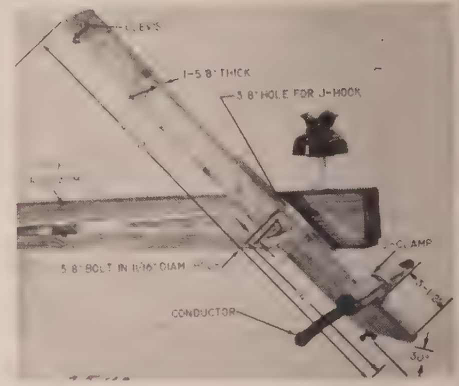
By Marvin Sexton and Bruce Staats
Linemen First Class, Ohio Power Co.
Portsmouth, Ohio

When conductors must be transferred from one crossarm to another, either above or below, it is usually a Herculean task, for the span of wire is heavy and inconvenient to reach. Weight exerted on a crossarm by a 4/0 span, for example, is about 125 lb., and handling this weight at a point four feet out from the pole can be cumbersome and hazardous. However, a simple lever arm does this job with little effort.

The primary function of the lever is to move the conductor to a point where it can be safely controlled by a rope block which is handled from the ground. The lever is also operated from the ground by means of a rope fastened to a clevis on the long end of the lever.

The lever arm was cut from a 60 in. wood crossarm brace. It is pivoted from a $5/8$-in. dia. bolt inserted through the hole in the crossarms for double-arming bolts. On a double crossarm the existing bolt is used as a pivot to rest the lever on. A j-shaped hook attached to the lever arm is used as a pivot point against the crossarm bolt to prevent the lever from slipping. Another j-shaped clamp holds the conductor (protected by a piece of line hose) in a rounded groove near the end of the lever arm.

The present lever arm can be used with energized conductors up to 7200 volts ungrounded delta. Modification of the device to permit its application with live-line tools is being studied; success with this venture will broaden its application to include use on energized lines of higher voltage. Total cost of materials and labor to make the lever arm was about $6.



Lever arm moves the heavy conductor out past the end of the crossarm and up over the insulator. Ropes and block handled by a groundman below help in controlling the conductor and in moving it from one crossarm to another.

THROUGH-STATION AERIAL CABLE SERVES CUSTOMER BUS

To provide service from a substation to a 13.9-kv bus supplying an industrial customer, The Kansas Power and Light Company elected to install three single conductor 350-mcm 15-kv cables spun into a single complete unit with aerial messenger, and run it right through the station. Advantages, according to Jay Wright, substation engineer, are: economy of overhead construction, rather than underground, use of smaller cable, cooler operation, and a better all-around installation.

The galvanized messenger was first attached to the steel framework of the substation and properly tensioned. Short pieces of messenger were attached to the main messenger at corners to insure a smooth, gradual bend of the cable. Cable placing rings were placed on the messenger at the start of each span, the pulling line threaded in, and the cable pulled in. During the latter operation, rings automatically distributed themselves, temporarily supporting the cable prior to spinning.

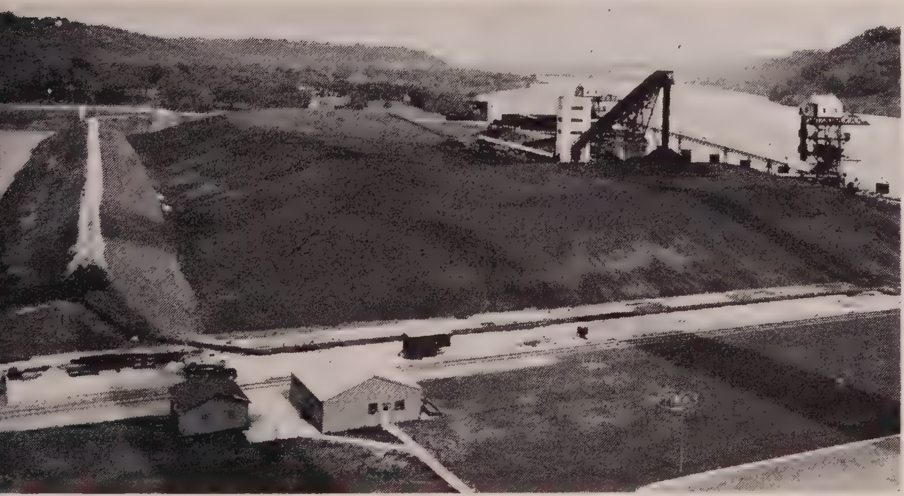
The spinning operation was then performed with a Neale Model K spinner, hand spinning at corners and supporting there with strap hangers. In this installation, the three conductors were placed and spun into a "V" configuration with the apex downward, and the messenger laying in the groove formed by the two upper cables.

The longest span is approximately 50 ft, raising and lowering as much as two feet from one span to the next. Enough cable was left at each end of the run for proper termination. Altogether, it is an attractive, neat, and practical solution.

Cable placing rings placed at the start of each span automatically distribute themselves as cable is pulled in; they support cable until spinning operation takes over.

GRADUAL SLOPE AIDS COAL-PILE MAINTENANCE

By R. L. RISDEN, Yard Supervisor
Clifty Creek Station
Indiana-Kentucky Electric Corp.



Before, the steep slopes (above) eroded in the rain and crevices could not easily be sealed to keep out the air. Now the long, gradual slope on the coal storage pile (below) can be tightly compacted and sealed. This prevents air from entering and aiding spontaneous combustion.

By flattening the slope of the coal storage pile at Clifty Creek Station, maintenance is easier and spontaneous ignition has been prevented.

This gradual slope is maintained by "back blading" with a tractor, pulling the fines back up the slope to compact and seal the coal in one operation. Formerly, erosion from heavy rains allowed air to penetrate through the coal and improve conditions for spontaneous combustion. This has been a problem with some of the greener coals used.

Previously, with the steep slopes, the eroded areas could not be sealed with a tractor, and hot spots and fires developed in the coal pile. About 2½ years ago, we began cutting down the steep slopes, using a drag line bucket and bulldozing as time permitted. After about six months, the slopes were sufficiently graded so that a tractor could back up the slope with the blade resting on the ground. During this time, not a single fire or hot spot has developed. Any erosion due to rains can be sealed quickly by "back blading" up the slopes.

This procedure has also reduced man-hours and equipment use for maintaining the coal pile. It also permits increased accuracy when taking the semi-annual survey to determine the size of the storage pile.

THREE TO TWO-WIRE METER CONVERSION SAVES $6,000

By RAY E. WARD
Division Meter Supervisor
Indiana & Michigan Electric Company

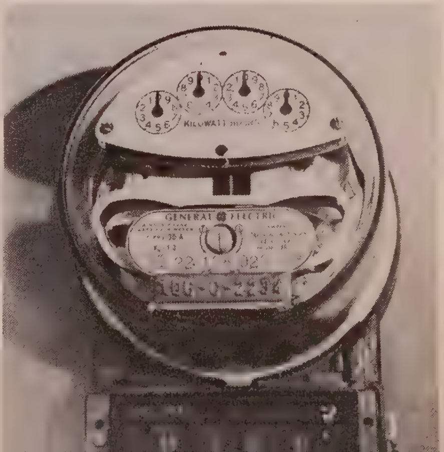
More than 300 surplus old style 5-amp, A-base meters have been con-erted from 3 to 2-wire service by the ort Wayne Division at a saving of 6,000 over the cost of new equipment. he cost of all labor and material for onverting the first 100 meters was less han 50¢ per meter, thus saving about 20 per meter, compared to buying new /3 wire meters plus socket adapters. urthermore, this conversion program as reduced the surplus of unusable -wire, A-base meters.

During the last six years the com-any has been buying and using on ew installations only socket base watt-our meters. Every time an A-base meter installation was rebuilt or re-ocated, socket equipment was used on he new installation. This produced a urplus of 15-amp, 3-wire A-base meters. Formerly, it was necessary to eep this surplus of 3-wire A-base meters for changeout purposes because hese meters were being renumbered nd tested.

Currently, the program for retiring older types of 2-wire meters of 5-amp capacity has created a need for 2-wire A-base meters of 15-amp rating to upgrade those installations. The purchase of new 2-wire meters was an expense to be avoided where possible. And the cost of using 2/3-wire socket base meters with necessary adapters would be prohibitive.

Now that so many 3-wire A-base meters are not needed, the solution that seemed advisable was to convert these for 2-wire use. Because these meters have surge-proof magnets and are entirely adequate for the higher loads experienced on 2-wire service, this approach seemed practical. These meters are easy to convert, as follows:

Connect the current coils in series with a short jumper. Remove the potential strap from terminal 2 to the potential coil, also the potential test link, in the meter terminal chamber. Extend the potential lead for connection to the grounded neutral, as shown in the photograph. The 240-v meter is now ready for 120-v service and can be tested as any 2-wire meter would be tested. Only very slight adjustments are necessary to make the meter read correctly for half-voltage service.



Three-wire watthour meter, Type I-30A, converted for two-wire use. Only slight adjustments are necessary to make meter read correctly for half-voltage service.

New Type Truck Speeds Utility Service

A 50 per cent reduction in number of return visits on appliance service calls is expected by United Illuminating Company through use of new International model AM-80 Metro-Mites, smallest American-made multi-stop trucks.

United Illuminating Company has turned to a new design in motor trucks to help improve its customer appliance service, according to Eugene Somerville, superintendent of operations.

The new trucks are International model AM-80 Metro-Mites, smallest American-made multi-stop units, which have been outfitted as repair shops on wheels. Four already have been delivered, replacing conventional light-duty trucks with utility bodies in the firm's 15-truck appliance service fleet.

A basic advantage of the Metro-Mite is its man-high body interior that allows men to work inside it, where previous models did not, Mr. Somerville explained. With it, United Illuminating servicemen can make more on-the-spot repairs while parked at a customer's residence, he added.

Most appliances or parts that usually had to be returned for shop work now can be repaired in the truck's closed and heated work area on the scene.

Use of the new trucks is expected to reduce by 50 per cent the number of return visits on service calls. Each month the firm's 21 servicemen make an average of 1,500 service calls, with 90 per cent of this total taking place at customers' homes.

In addition to cutting the number of return calls, the mobile repair shops reduce customers' waiting time for repairs. The interior of each truck has been equipped with a work bench and storage areas for tools and repair parts.

Solid State Devices Aid Computer Design

"The increasing use of solid state elements in computer control systems has improved the reliability of the systems and reduced what was formerly a prohibitive maintenance cost," according to Thomas Roy Jones, president of Daystrom Incorporated, electrical-electronics manufacturing company.

As a result, he predicted increasing acceptance of the systems in process industries and in such fields as power generation and distribution.

"In the area of solid state components," Mr. Jones said, "semi-conductor devices have been materially improved in performance and reliability while being drastically reduced in cost. This development may be expected to advance the whole broad area of solid state application—from transistor radios to computers."

In basic computer technology, the emphasis will be upon increased computational speeds. Advanced discussions now envision computational rates up to one thousand million bits per second. Elements, such as magnetic field memories and tunnel diodes, are making possible the use of solid state elements at higher computing speeds.

"Right now," Mr. Jones said, "the biggest deterrent to applying computer control is management's reluctance to take the big step. Considering the size of the investment involved, it is not difficult to understand."

This cost problem still remains a deterent to wide acceptance. "In general," he points out, "the cost of solid state devices still exceeds the cost of vacuum tube equivalents but an economic cross-over may be anticipated —if not this year, then soon thereafter."

G-E Cuts 50-kvar Capacitor Prices 5 Per Cent

General Electric Co. has followed up reductions in prices on transformers and hydro-generators with a 5 percent reduction in prices of all 50-kvar capacitors.

The company has reported that new manufacturing techniques and the availability of improved dielectrics have made possible the new unit which is 20 percent smaller and 17 percent lighter than units formerly available.

Mfgrs. Outline Problems to S.E.E.

Communications, industrial sales, and acceptance of lighting standards were problems outlined by three manufacturers at the recent Southeastern Electric Exchange Sales, Advertising and Public Relations conference.

Better Communications

Get the right information to the right man at the right time! This was the message of W. M. Terry, Jr., director of engineering coordination, Allis-Chalmers Mfg. Co. He said that "if we can accomplish this in our engineering operations, no matter how simple and small the company may be, or how large and complex its engineering operations, we will accomplish our purpose and achieve better engineering results."

New Industrial Loads

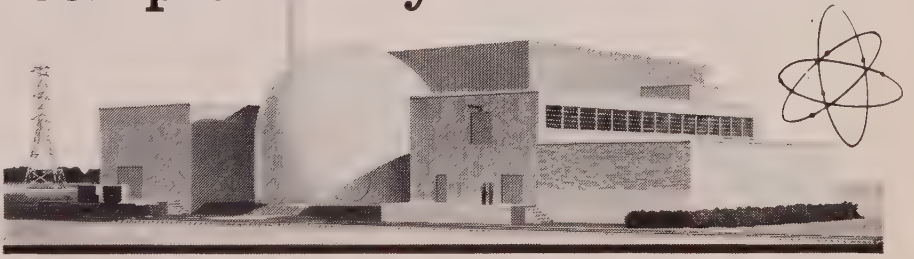
Some idea of the staggering opportunities ahead for industrial sales can be obtained from their expected growth to 697-billion kwh in the next 20 years, said R. D. Ketner, General Electric Co. By 1965 the textile industry should consume 22.5-billion kwh, as compared to 14-billion kwh only 10 years before. Applications expected to account for this increase are: air conditioning to facilitate cotton spinning, improved factory lighting, higher spinning speeds, improved electric material handling by blowing through ducts, better lint gathering and electrically heated slashers.

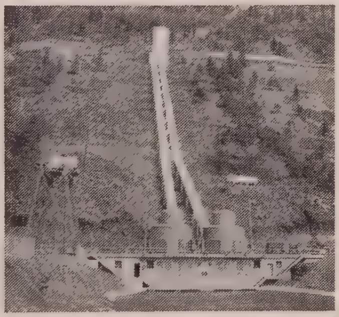
Selling New Lighting Standards

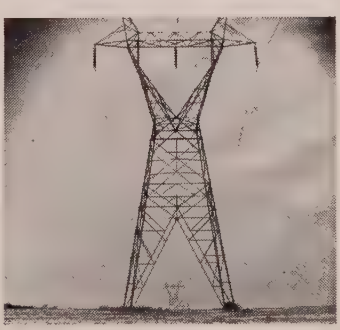
Utility men must first convince themselves that the newly recommended lighting standards are actually required and based on sound scientific facts before attempting to sell them, according to W. H. Johnson, product engineer, Westinghouse Electric Corp. They must build themselves fact books of actual case histories of plants which have benefited from modern up-to-date lighting systems and must become familiar with the most modern light sources and latest equipment, he said. If the basic ingredients are combined with proper distribution system, modern interior, environmental control and progessive maintenance program, the utility men will have no trouble in selling these new lighting standards.

For additional reports of the conference, see the January 15 issue of EL&P.

Which Pioneer service do you need to complement your own staff?







DESIGN AND CONSULTING ENGINEERING SERVICES

Pioneer specializes in designing power plants and offers design service for fossil fuel, hydro and atomic plants. It will also assist in forecasting load growth, in site selection, in purchasing and expediting of equipment and construction management. Pioneer's other services include substation, transmission and distribution studies and design.

SERVICES IN REGULATORY MATTERS

Pioneer offers its services in all phases of Federal, State and local utility regulation, including natural gas and electric rate matters, certificate proceedings, licensed project accounting requirements, depreciation studies for rate case and income tax purposes, cost allocations and special studies.

CORPORATE SERVICES

Pioneer offers its services as business and management consultants; stock transfer and dividend disbursing agents; financial, accounting and tax consultants.

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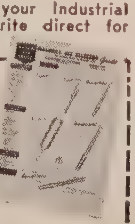

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Free cutting design permits faster, easier drilling. Multi-spiral flutes assure positive dust removal from the cutting zone. Cyclo-Core Multi-Tipped Carbide Bits last longer — are easier to resharpen — you can do it yourself! Sizes from ¼" to 6" in diameter. Extra lengths up to 36".

When starting holes, stop "walking" and get accurate hole location with the *EXCLUSIVE* New England Carbide removable "STARTING CENTERS." •

New England
CARBIDE-TIPPED MASONRY DRILL

NEW ENGLAND NE CARBIDE

DESIGNED, ENGINEERED and **PROVEN for the Job!** Copied but **NEVER** equalled!

For Rotary Drilling of **ORDINARY MASONRY** use **CYCLO-TWIST**

The most efficient, single point drill available. Sizes 7/64" to 1½" diameter.

For **ONE-MAN DRILLING** of **ANY MASONRY** from Brick to Granite use

THUNDER-TWIST HAMMER DRILLS

Sizes 3/16" to 1½" diameter

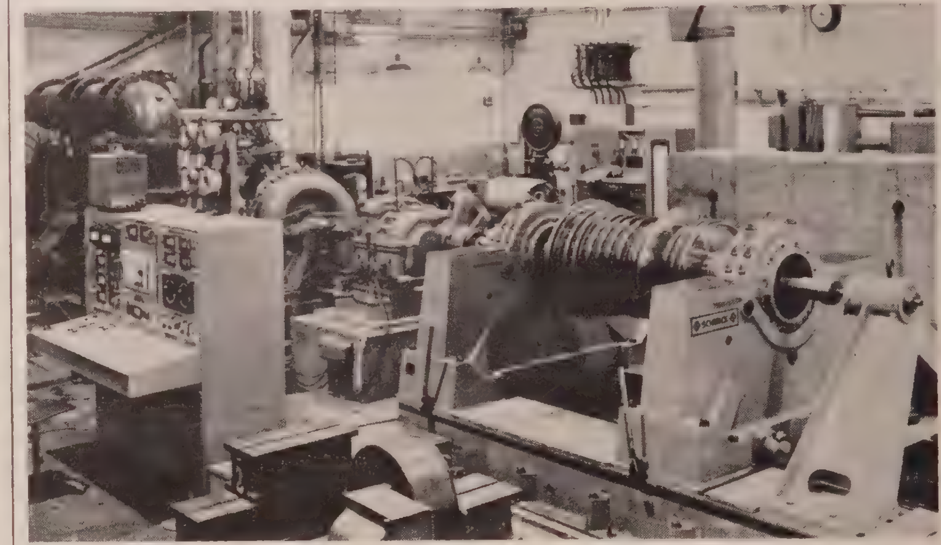
Available at your Industrial Supplier or write direct for information

New England
CARBIDE TOOL CO., INC.
55E Commercial St.
Medford 55, Mass.

Please send me FREE copy of the "MASONRY BIT SELECTOR GUIDE".

NAME ____________________
ADDRESS ____________________
CITY ______________ STATE __________

Install High-Speed Balancing Machine



A high-speed dynamic balancing machine capable of balancing 7-ton rotating units at 12,000 rpm, has been installed by DeLaval Steam Turbine Company, Trenton, New Jersey.

It will be used to detect minute inequalities in distribution of weight about the center of rotation of rotating components of turbines and similar equipment. The machine at DeLaval will automatically indicate where weigh should be added or removed to bring a rotating component into near-perfect balance, so that in use it will spin smoothly in its bearings with a minimum of vibration.

According to officials of the firm, the machine is sensitive to bearing vibrations of the order of 4-millionths of an inch displacement of center of gravity. It can readily detect unbalance as small as one gram at a 10-inch distance from the axis of rotation on a 5500-pound rotor spinning at 4000-rpm.

Hatfield Wire Builds Plant

One of the largest and most modern plants in the country devoted exclusively to the production of all types of natural and synthetic rubber insulated wire and cable for the electrical industries is being built for Hatfield Wire and Cable Division of Continental Copper & Steel Industries, Inc. It is scheduled for completion early in 1960, at Linden, New Jersey.

The new plant will add 240,000 square feet to Hatfield's present facilities at Hillside and Union, New Jersey. Production of rubber insulated wire products will begin early next spring, with full production expected by year-end. New product lines will include higher voltage cables for utilities and larger multi-conductor cables.

SALES BRIEFS

Panellit, Inc., has opened a southwest region office in Houston, Texas, to handle sales and service on Panellit's complete line of process control equipment, including engineering, design, and fabrication of standard and graphic panelboards, annunciator system, and related products and services. Joseph E. Klueger has been named sales manager, and George H. Nolte chief engineer for the region.

Allis-Chalmers Manufacturing Co. has appointed the **Sandman Electric Co.,** Boston, Mass., distributors for the A-C line of electrical equipment. Their territory will include Essex, Suffolk, Norfolk, and Middlesex counties in eastern Massachusetts.

GRAPHIC INFORMATION HANDLING . . .

(Continued from page 35)

extremely practical for our company to do its own enlarging and reducing of film material very inexpensively, officials have found it possible to accommodate all of the different offices with camera reductions and enlargements of map work, photographs, etc.

Advertising Usage

This equipment has also been useful to the utility's advertising department. Rough advertising layouts, sketched on large sheets are sent to the reproduction department where the recorder reduces them to the actual size of the finished ad. A negative master is then made for the offset duplicator which runs off 3000 to 4000 copies to be distributed to the different offices as well as to all sales personnel for use as a sales tool.

Portable Viewer

An important part of the system is a 70-mm portable viewer, which makes it possible for any of our personnel to view the film at their own desks. For this purpose the viewer has a screen, 14½ by 10 in., built into the inside of the cover. For group viewing, the viewer can project needle sharp and evenly illuminated images up to 38 by 44 in. on a screen or white wall.

Transparencies are used in the viewer. The transparencies are made on a printer, which is part of the system, from the negatives developed on the recorder.

Because of the limited space available, the vertical easel on the equipment is especially advantageous, since it permits us to keep the height of the entire installation down to a minimum.

According to the manufacturer, the New York State Electric & Gas system is the "smallest installation we have ever made, spacewise." Normal operating space for such a system is 20 by 30 ft. Our installation occupies a room 15 by 8 ft, where the major portion of the operation is carried on. Films are processed in a room 7 by 10 ft.

No Special Training

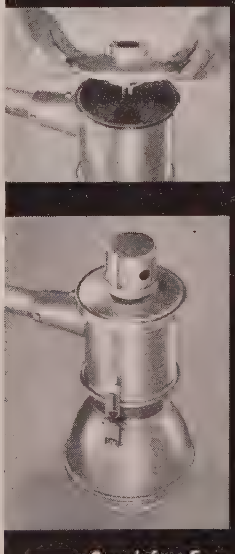
Another feature of the installation is that it does not require any special training of personnel. Most of the manual operations are performed by touching a switch or pressing a button. Remote controls at the easel operate the shutter and film exposure and advance by means of electro-magnetic devices. This also leaves the operator free to load and unload the easel.

Here is the general procedure for recording drawings:

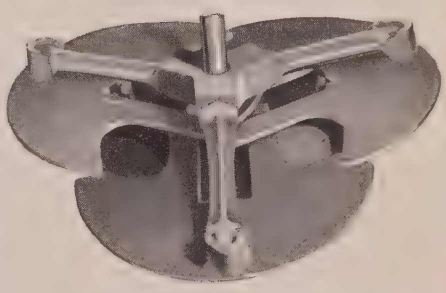
The material to be reproduced is centered on the easel, and the voltage on the rear illumination lights is adjusted. The distance between the drawing on the easel and the camera head is determined by the size of the drawing. Here the operator is guided by position distances marked off on the camera trolley. For instance, a tracing or drawing 22 by 30 in. could be shot at #30 on the track, whereas a drawing 30 by 34 in. would be shot at position #40.

After the drawing has been placed on the easel, the exposure time is set on the camera, the operator then pushes a button taking the picture. If 300 pictures of a tracing are required, all the operator has to do is set the timer at a certain exposure time (in most cases 4½ sec), push the predetermined cycle control, and the rest is automatic. After the picture or pictures have been taken, the film magazine or camera head is taken into the film developing room where the film is removed and the frames that had been exposed are cut off, developed, fixed, washed and dried.

Snapit-On
Protector Shields for CONDENSER AND BOILER TUBES
DETERS EROSION
PREVENTS MATERIAL WASTAGE
REDUCES MAINTENANCE
GIVES TUBES LONGER LIFE
MADE IN STAINLESS STEEL
AVAILABLE IN ALL SIZES
THE Vince BASNIK COMPANY
• 2020 CENTER STREET • CLEVELAND 13, OHIO



FORM 110
LUMINAIRE ADAPTER
CONVERTS TO TWIST LOCK IN LESS THAN A MINUTE
Send for Free Literature!
SunSwitch DIVISION
RIPLEY COMPANY, INC., MIDDLETOWN, CONN



EXTRA Holding Power
QUICKLY Installed
TOUGH For long life
EVERSTICK ANCHORS
For new construction and maintenance —Everstick Anchors speed up work and provide dependable anchorage on all types of jobs. Made of resilient, rust resistant malleable iron. The toughest anchors made. Write for bulletin.
EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

BIGGER

More power packed into new Pennsylvania contour design transformers

More kva per pound

Again, Pennsylvania has raised the kva limit for one-piece, upright shipment of large power transformers. Shell-form, Contour Design transformers are now lighter, more compact . . . and structurally stronger . . . as a result of Pennsylvania's new three-section tank design. Even quieter operation than heretofore also is assured.

The core and coils are assembled in the base section of Pennsylvania's new three-section tank *without the use of a separate frame.* When added and welded into place, the center tank section then provides sturdy side bracing for the internal assembly.

Controlled Clamping Reduces Noise

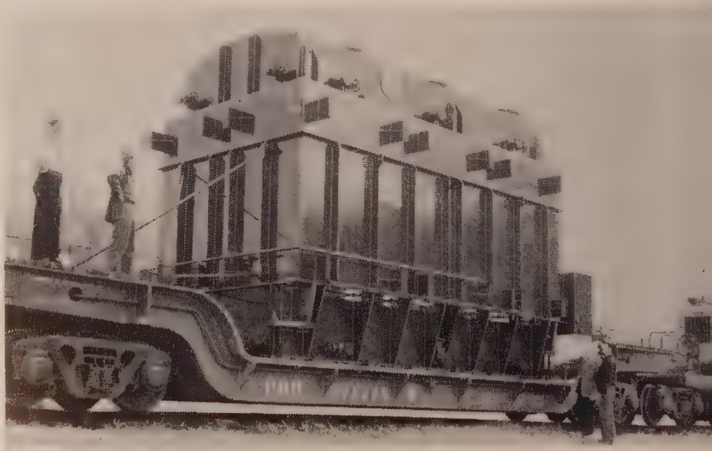
Before the top section is added, the core is clamped to the bottom section by a method that utilizes controlled pressure—an important factor in noise reduction. Closely spaced jack screws, built into the bracing band around the top of the center tank section, distribute the pressure evenly along the core. Careful control of this pressure reduces the sound level of the entire structure.

Providing more kva per pound and per cubic foot has been a habit at Pennsylvania since 1952, when the company pioneered one-piece, upright shipment of large power transformers. When larger or higher voltage transformers are required, contact Pennsylvania Transformer Division, McGraw-Edison Company, Canonsburg, Pennsylvania.

315,000 KVA ▶

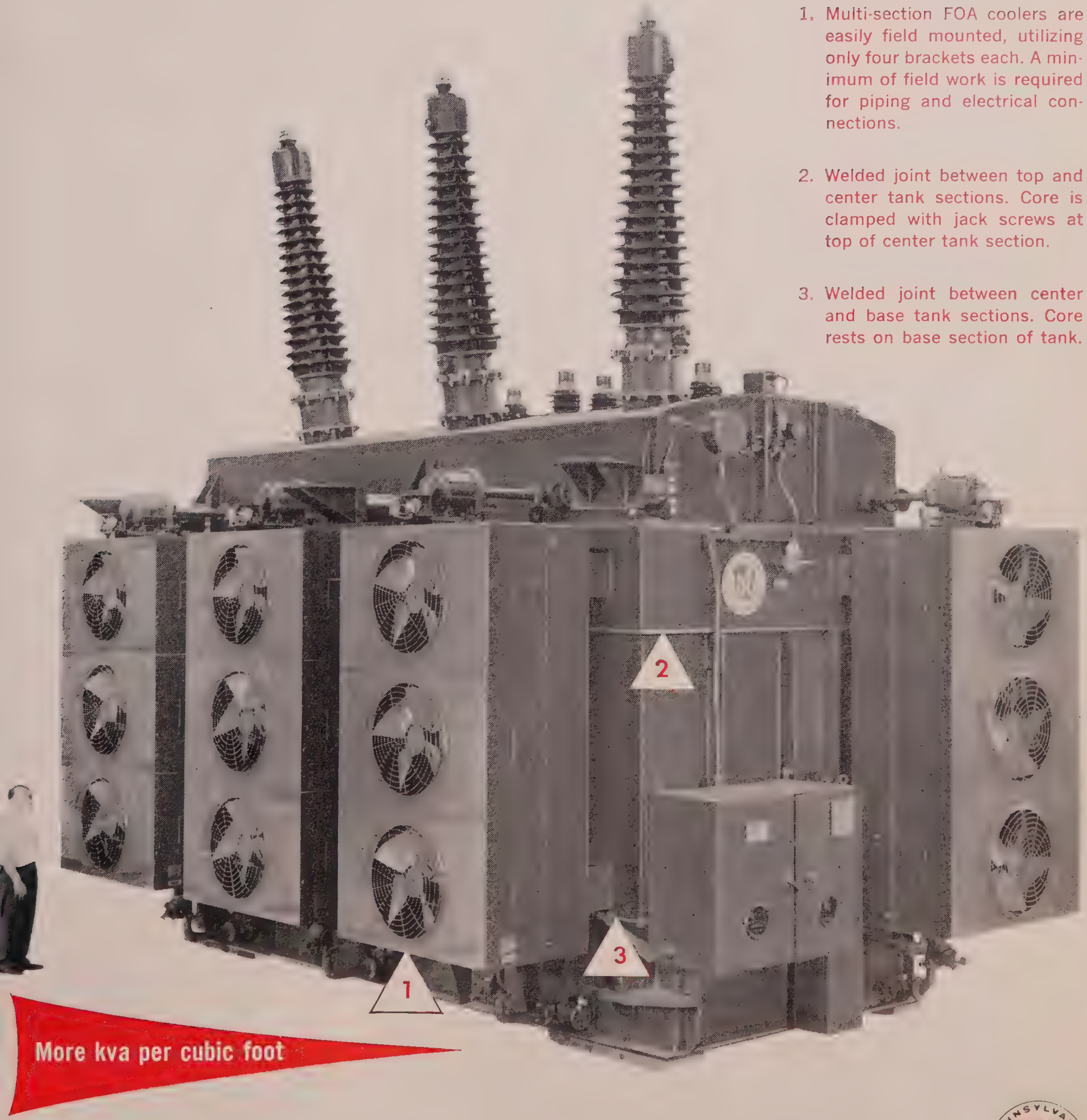
A new three-section tank and a controlled-pressure method of core clamping* permit more kva per pound and per cubic foot in Pennsylvania shell-form Contour Design transformers. A good example: this 315,000-kva, 230,000-volt unit.

*Patent pending



PENNSYLVANIA contour design

·YET SMALLER AND QUIETER



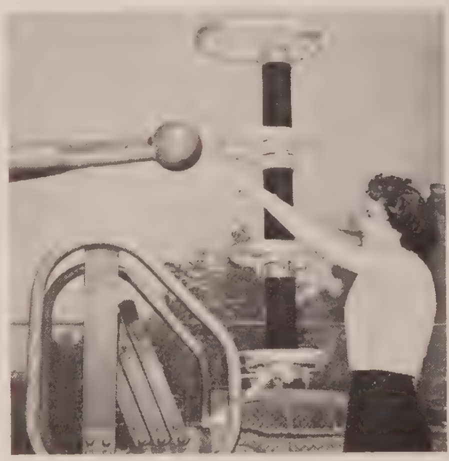
1. Multi-section FOA coolers are easily field mounted, utilizing only four brackets each. A minimum of field work is required for piping and electrical connections.
2. Welded joint between top and center tank sections. Core is clamped with jack screws at top of center tank section.
3. Welded joint between center and base tank sections. Core rests on base section of tank.

POWER TRANSFORMERS

NEW PRODUCT DESIGN

Transient Limiting Device Helps on 345-kv Interference

Transient limiting device, by **Delta-Star Electric Div., H. K. Porter Co., Inc.,** is available for interference problem solving on 345-kv switches. Bolted to a switch's front lug pad at the contact, the device is comprised of a porcelain tube about four-ft high and seven-in. diam. With four aluminum control rings spaced 18 in. apart vertically, it weighs 75 lb. From bottom to top, the rings are increasingly more oval shaped, protruding toward the switch contact. As the switch opens, the blade rises vertically and the corona ball on its tip swings in an arced movement, passing no farther than one in. from each ring and sparking to the ring as it passes. From the rings, the current passes through resistors which dampen out the oscillating wave. This prevents the discharge from jumping from the corona ball. back to contact.



For more data mark #36 on reply card

Revolving Aerial Ladder

Revolving aerial ladder (Series HIE), by **Powers-American Div., McCabe-Powers Body Co.,** has its elevation actuated by a hydraulic cylinder which is powered by an electric motor-driven pump. The motor, operated by the truck battery, is designed to work with 6- or 12-v chassis electric system and use of the motor has no appreciable effect on battery life. Control switch can be furnished to permit operation of the ladder from the working platform.

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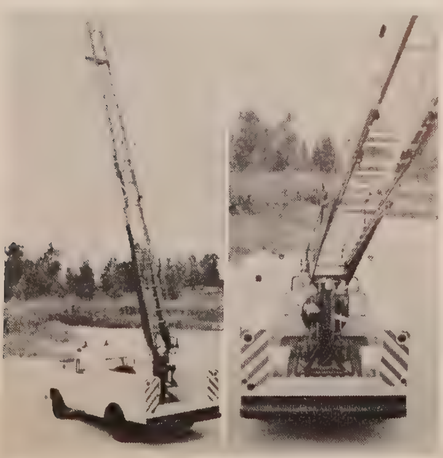
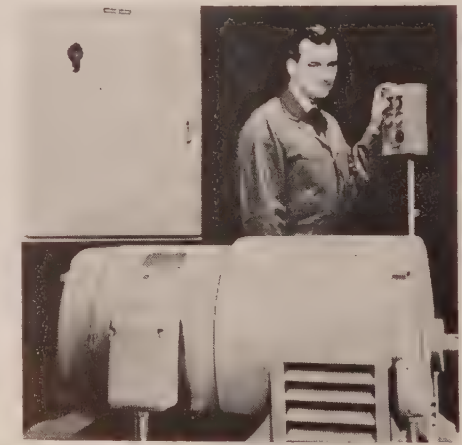




Adjustable Speed Drive

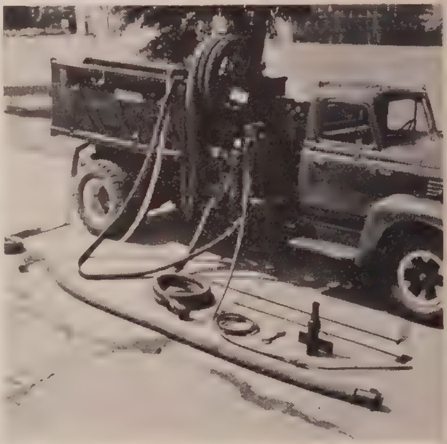
Eddy-current-coupling adjustable speed drive line from **General Electric Co.** will handle five to 100 hp. Known as Kinatrol®, the line can be used on screw-type coal feeders, and features simplified design with fewer moving parts for longer service life and sharply reduced maintenance. The new stepless adjustable speed drive is being offered as a complete package including the drive unit, control enclosure with control for both coupling and integrally mounted Tri-Clad 55® a-c motor, and operator's station.

For more data mark #38 on reply card

Vault Cleaner

A vault cleaner, the Elgin Utility Eductor, by **Elgin Sweeper Co.,** is a self-contained unit powered by its own lighting, and as a load-break isolating stationary engine which operates a pump and supplies the power for the hydraulic body hoist and hose reel. The jet Eductor principle creates a vacuum at the nozzle which rapidly draws settlings and sludge out of the pit, by-passes the centrifugal pump, and deposits the material into the rear compartment of the tank truck. Water is filtered and re-circulated.

For more data mark #39 on reply card



High-Fault Interrupter

Interrupter switch (type HPL-C), by **I-T-E Circuit Breaker Co.,** has been modified for high fault-closing requirements up to 40,000 amps. Design features include new spring-loaded, heavy duty, self-aligning silver-plated stationary main contact fingers; heavy, silver-tungsten tipped, hard drawn electrolytic copper blades, heavy, silver-tungsten tipped, moving and stationary arcing tips; special blade guide; and heavy, formed steel base.

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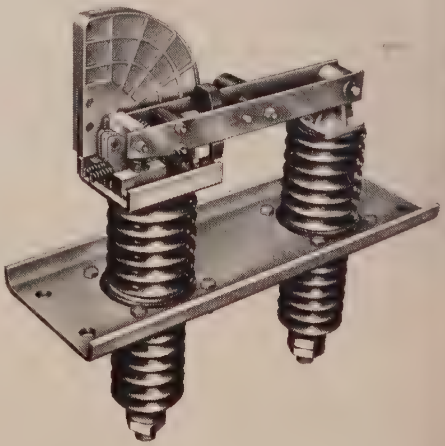

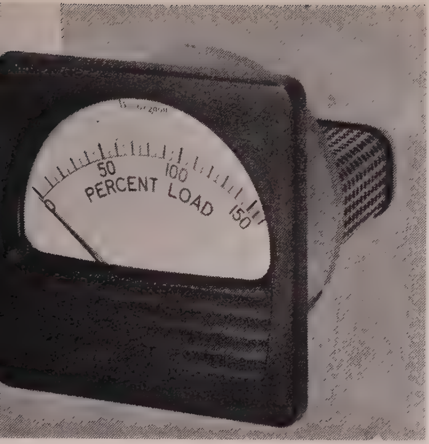

Motor-Load Indicator

Motor-load indicator (C-371) for ither single- or three-phase, 50- or 60-ycle induction motors is now available rom **Westinghouse Electric Corp.** t is designed for use with a five-amp urrent transformer. It measures the seful or working component of load urrent (I Cosine Θ). Calibrated for 90-280 v, or for 350-550 v. Two ac-essible resistor links permit operation f 190-280 v. Removal of the resistor nks increases the range.

or more data mark #41 on reply card

nsuflation Trainer

Breathe Life Trainer, by **Medical upply Co.,** is designed for insufla-ion-technique training without mouth-o-mouth contact. The practice "vic-im" wears a plastic simulated lung in hest position to which is connected an ir tube with plastic mouthpiece which s inserted into the "victim's" mouth s well as that of the person practicing he rescue breathing. Neither person is n contact with the other's breathing or nouth.

or more data mark #42 on reply card

Surface-Mounted U.G. Units

Compartmented distribution transformer line for ground-level installation, by **Pennsylvania Transformer Div., McGraw-Edison Co.,** is labeled "Lawn-master Pole Star Transformers." The new units utilize the same core-and-coil assembly as other transformers in the Pole Star distribution line. Ratings include 25 through 167 kva, single phase, and 75 through 500 kva, three phase, in all standard voltages through 15 kv. Compartments are completely weatherproof.

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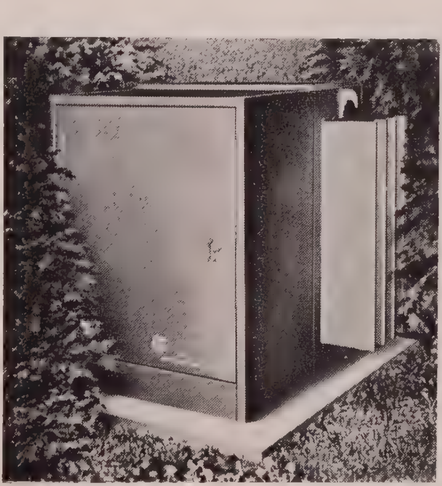
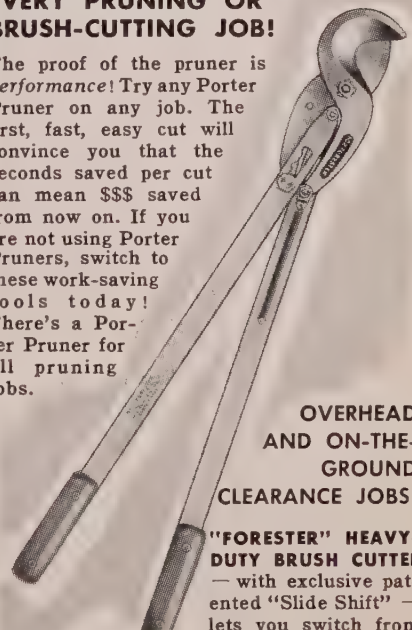
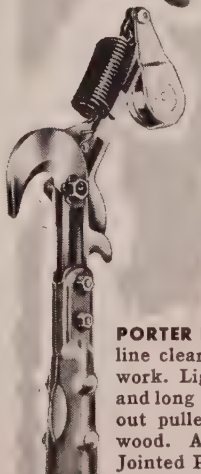


High-Pressure Ag Contacts

Solid silver to solid silver contacts—that do not gall, permit heavy wiping action, and eliminate corrosion under adverse atmospheric conditions—are being used by **Federal Pacific Electric Co.** in its air disconnect switch line. At present, the new contacts are available on all TG and YVH group-operated switches in the company's line. The new contacts result from a special rolling procedure that hardens coin silver harder than hard-drawn copper.

For more data mark #44 on reply card



MAKE A "TEST CUT" WITH BETTER HKP® PORTER PRUNERS

AND DISCOVER
FASTER, EASIER CLEANER *Pruning*

A FINER TOOL FOR EVERY PRUNING OR BRUSH-CUTTING JOB!

The proof of the pruner is *performance*! Try any Porter Pruner on any job. The first, fast, easy cut will convince you that the seconds saved per cut can mean $$$ saved from now on. If you are not using Porter Pruners, switch to these work-saving tools today! There's a Porter Pruner for all pruning jobs.

OVERHEAD AND ON-THE-GROUND CLEARANCE JOBS!

"FORESTER" HEAVY-DUTY BRUSH CUTTER — with exclusive patented "Slide Shift" — lets you switch from "easy" to "hard" to "toughest" cutting simply by shifting the handle. Takes the place of 3 ordinary pruners. 2 sharp, fine-steel blades give quick-healing, clean cuts, make work easy for operator. 2 models — 0290F — Capacity 1½" green wood; 0390F — Capacity 2" green wood.

PORTER POLE PRUNERS for utility line clearance. 4 models — for all work. Lightweight model — short and long arm types, with and without pulleys. Cut up to 1" green wood. Available with Solid or Jointed Poles.

ASK YOUR SUPPLIER — or write us for the complete PORTER PRUNER catalog.

HKP® H. K. PORTER, INC.
Somerville 43, Mass.

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for
every
application

Moloney

HIGH CAPACITY GENERATING STATION TRANSFORMERS

TRANSMISSION SUBSTATION TRANSFORMERS

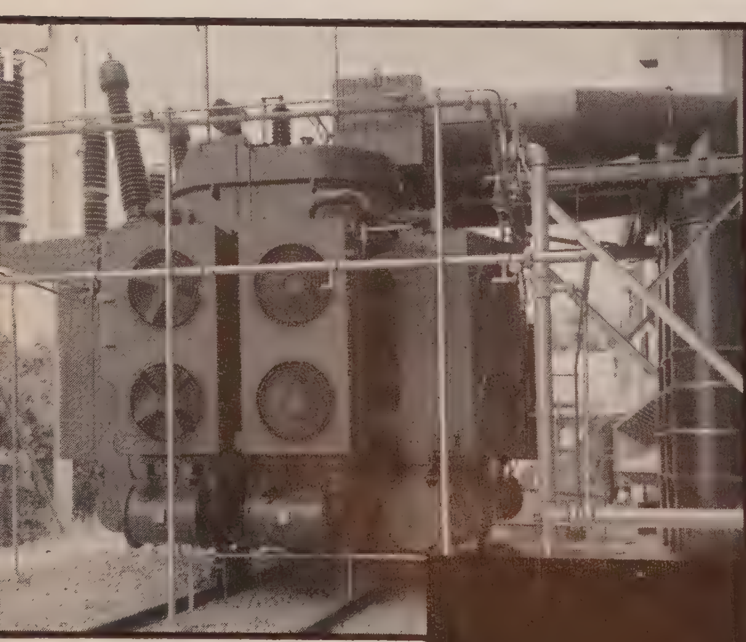
LTC TRANSFORMERS

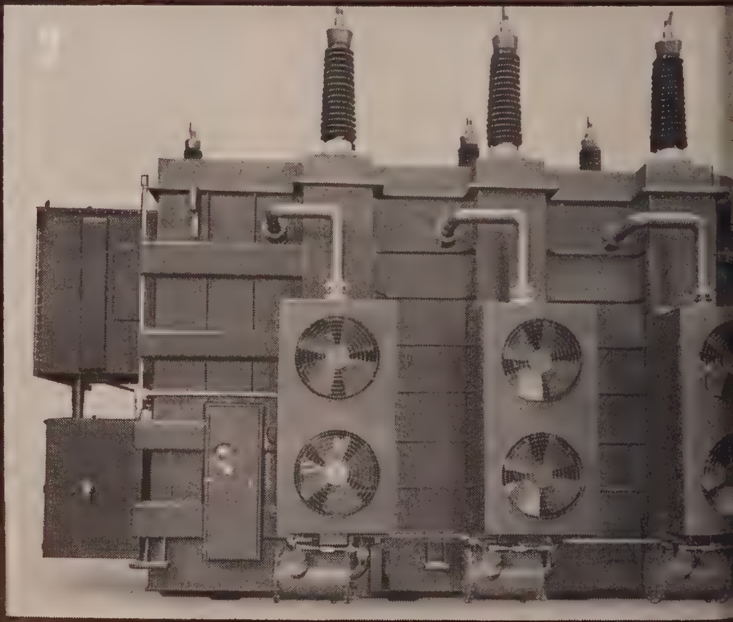
AUTOTRANSFORMERS

TRANSFORMERS OF SPECIAL ELECTRICAL OR MECHANICAL DESIGN

Versatility in transformer design and manufacture is one of the attributes which contribute to Moloney's leadership in the transformer field. Shown here are some of the many instances where Moloney has designed transformers to meet the exact requirements dictated by the peculiarities of the specific installation.

These installations exemplify the flexibility, versatility and capacity which enable Moloney to manufacture quality transformers for every application. Whatever your power transformer requirements . . . Specify Moloney Transformers . . . All Along The Line.





MOLONEY ELECTRIC COMPANY

Manufacturers of Transformers for Utilities,

FACTORIES AT ST. LOUIS 20, MO., AND TORONTO, ONT., CANADA

Transformer

1 217,000 KVA, Class FOA, 13.5—234 KV
Potomac Electric Power Company

2 160,000 KVA, Class FOA, 161—115 KV & 13.8 KV @ 42,000 KVA, LTC Autotransformer
Kansas City Power & Light Company

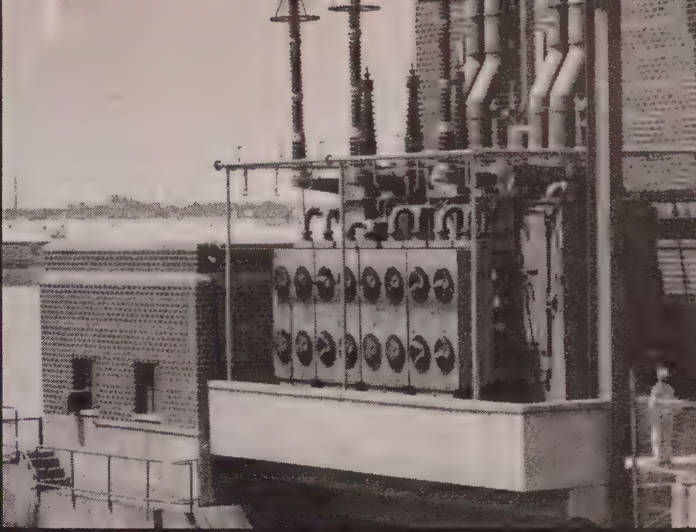
3 135,000 KVA, Class FOA, 13.8—115 KV
New Orleans Public Service, Inc.

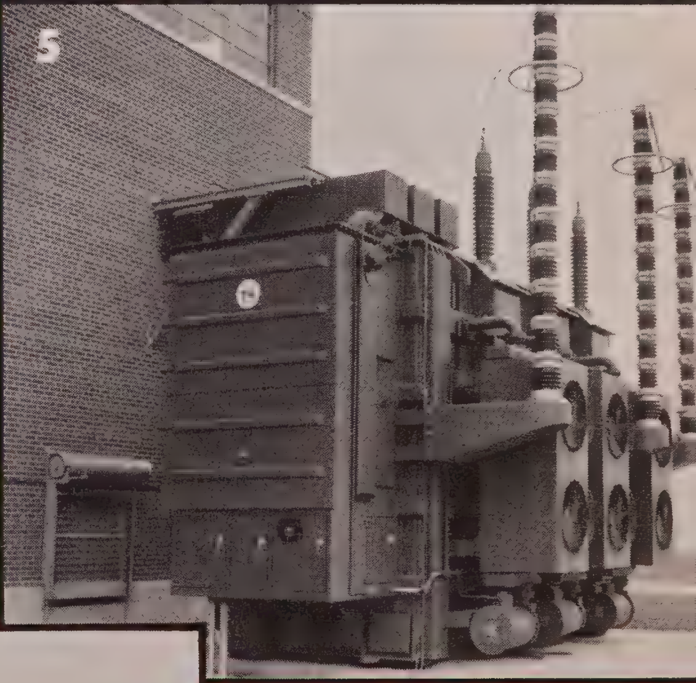
4 125,000 KVA, Class FOA, 13.8—138 KV, LTC
Union Electric Company

5 100,000 KVA, Class FOA, 14.4—161 KV, LTC
Iowa Power and Light Company

6 20,000/26,667 KVA, Class OA/FA, 132—12.6 KV, LTC
Commonwealth Edison Company

ME59-12

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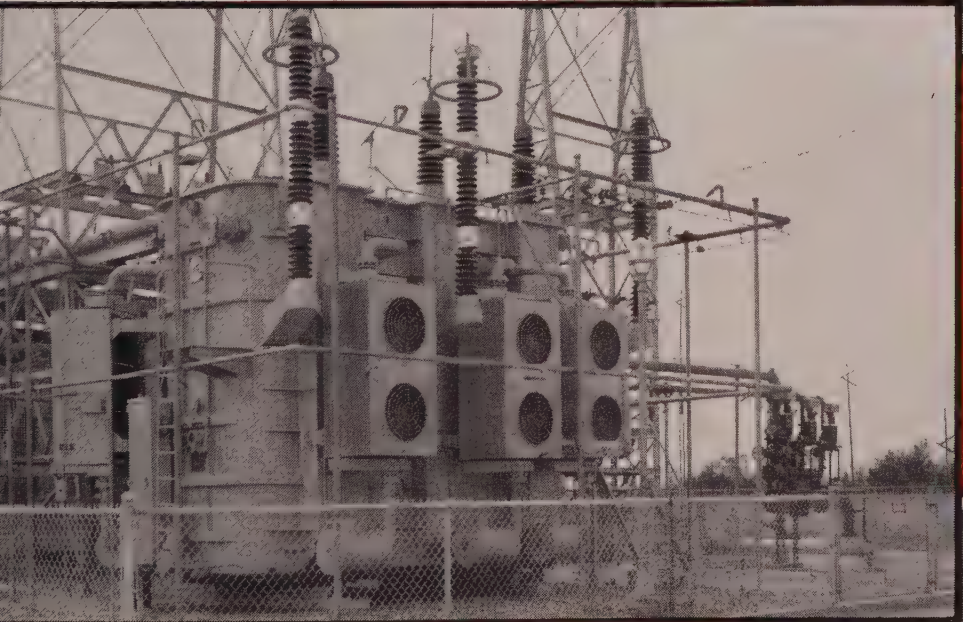


6

ndustry and Electronic Applications

ALES OFFICES IN ALL PRINCIPAL CITIES

Drum-Filling Cover

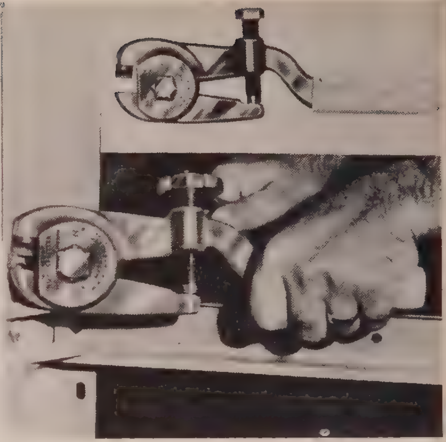
Polyethylene drum-filling cover, by **Delaware Barrel and Drum Co.,** is light weight and corrosion proof. It is available in 15-, 30-, and 55-gallon sizes and will fit all standard fill lines on steel, fibre and polyethylene drums. It is molded of unbreakable, translucent natural polyethylene with built-in handles and molded pouring lip. Other advantages include it's resistance to chesmicals and it's expandable fill-pipe opening.

For more data mark #45 on reply card

Single-Arm Derrick

Single (radial) arm, hydraulic derrick (CD) by **Tel-E-Lect Products, Inc.,** offers great working versatility. It is designed to mount to standard and existing utility bodies and is furnished as a complete package for installation in the user's shop. All hydraulic fittings and connections are factory pre-fabricated. The derrick is mounted to the left rear of the truck, thus affording increased stability of the entire unit when the derrick is working.

For more data mark #46 on reply card



Swivel Jaw Nut Splitter

Swivel Jaw Nut Splitter, by **H. K. Porter, Inc.,** is designed to cut nuts up to, and including $\frac{7}{8}$-in. across flats. To operate, swivel blade is placed against side of nut, power screw is turned by hand until jaw is tight against nut, and then tightened with a hand or power wrench until enough pressure is applied to split the nut. The tool will not damage the bolt from which the nut is removed, and the whole operation takes but a few seconds.

For more data mark #47 on reply card

NEW from General Electric . . .

GENERAL ELECTRIC CUTOUTS WITH EXCLUSIVE GAS PRINCIPLE PERMIT QUICK, SAFE AND ECONOMICAL LOAD BREAK

by CHARLES J. GRAHAM, Supervisor, Distribution Arrester & Cutout Sales

The gas load-break feature available since 1957 on G-E 100A enclosed cutouts, has now been incorporated into all G-E open type cutouts. This means your linemen, using conventional switchsticks, can interrupt load currents safely and quickly even at full rating with G-E cutouts. As the cutout is opened the load current arc is extinguished within a few cycles by gas from a replaceable monel cylinder.

This revolutionary load-break principle is ***safe, simple*** and ***economical.*** It overcomes the corrosion, force and link-stretching problems involved in the mechanical link-break principle. And ***the lineman has complete control***—his switchstick is in the same ring that operates the fuse holder.

More important there are no complicated, expensive switchsticks required. Even the insulator frame is the same. Simply change fuse holders to get load break, or use disconnecting blade with cylinder to get 200 amp load break.

Utilities are finding more and more applications for load-break cutouts—at sectionalizing points, large transformer banks and capacitor installations. For low-cost switching applications, gas load break is the best solution.

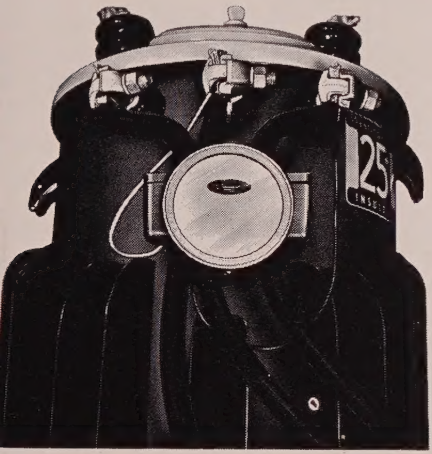
For more details about our full line of proven cutouts with gas load break, contact your G-E representative, or write Sect. 435-19, General Electric Co., Schenectady, N. Y.

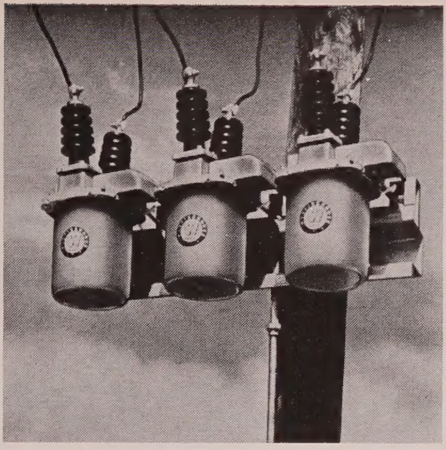
GENERAL ELECTRIC

oad Indicator

Load indicator (type TL) designed
or new or existing distribution trans-
ormers, is now available for 25-kva
nits from **Westinghouse Electric**
orp. Ratings from five through 50
va will follow. The unit can be
nounted and connected outside the
ransformer tank. It makes possible the
elective monitoring of loads across an
ntire system with minimum cost and
ime. The indicator can be mounted on
he pole or elsewhere for remote moni-
oring.

or more data mark #48 on reply card





Distribution Oil Switch

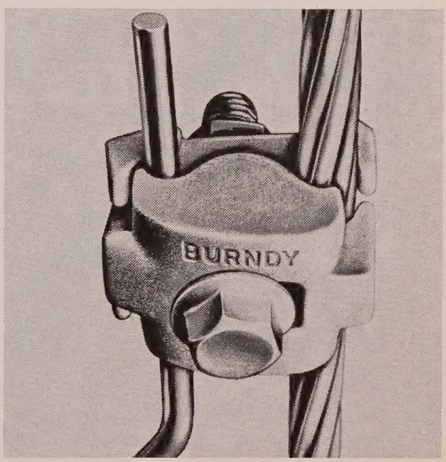
A 200-amp, 15-kv oil switch (type CSL by **Westinghouse Electric Corp.,** can be used on pole-mounted capacitors, sports-field and street lighting, and as a load-break isolating switch on rural and suburban distribution systems. Solenoid operated, it requires two cycles to open and six to reclose. During closing, initial contact is made on the tips of contact fingers, which are wiped clean as closing is completed, minimizing resistance.

For more data mark #49 on reply card

Clamp Fingers Interlock

Aluminum parallel groove clamps with interlocking fingers, by **Burndy Corp.,** are an addition to the "Tapit" line. Interlocking fingers on the connector body halves prevent rotation and mis-matching. Gripping edges on the hexhead bolt and square surfaces on the connector body facilitate two-wrench installation, while the non-turning square shank simplifies single-wrench installation. Type UCG accommodates Cu, Al, and ACSR from #8 through 1/0.

For more data mark #50 on reply card



. . gas load break on complete line of distribution cutouts

"Man, dig these sturdy Haley poles!"

Haley's

CEDAR POLES
and
FIR CROSS ARMS

Light in weight and clean. PENTAchlorophenol treated in our modern plant for protection against decay, moisture and insect damage.

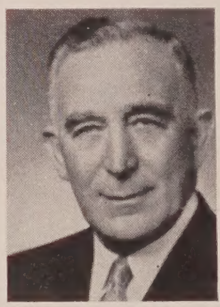
TWO strategically located yards:
MINNEAPOLIS, MINNESOTA
FINDLAY, OHIO

R. G. HALEY & CO.
SPITZER BLDG.
TOLEDO 4, OHIO

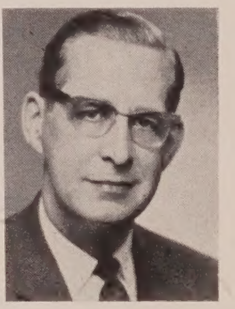
MEN OF POWER

Combustion Names Two

Combustion Engineering, Inc., has announced the election of two new vice presidents—Herbert M. Lowenstein and John L. Menson.



Lowenstein



Menson

Mr. Lowenstein, formerly director of engineering product design, has been named vice president and chief engineer. He has been with the company since 1924 and has served in various engineering capacities including boiler design, contract engineer, and assistant chief engineer.

Mr. Menson was formerly director of engineering field operations. He has been named vice president—engineering. A member of the organization since 1936, he has been division manager of industrial engineering and assistant chief engineer prior to assignment in field operations.

Sargent & Lundy Announces Changes

Sargent & Lundy has announced a number of year end changes in their organization.

Andrew R. LeBailly, partner and chief engineer, reached retirement age and resigned from the partnership effective December 31, 1959. Mr. LeBailly, who completed over 32 years of service with the firm, was admitted to the partnership in 1948 and had served as chief engineer since 1954.

The position of chief engineer will be filled by Henry C. Schroeder, partner and former chief mechanical engineer. Mr. Schroeder has been with the firm since 1936 and has been a partner since 1948.

Harry H. McMeen has been named to succeed Mr. Schroeder in the chief mechanical engineer position. Mr. McMeen, a partner since 1951, has over 21 years of service with the firm.

John J. Walsh, mechanical engineer, was admitted to the partnership effective January 1, 1960. Mr. Walsh, a graduate of Northwestern University, started with the firm in 1947 and was appointed to the position of Associate in 1956.

Men of Power Briefs

A number of new appointments have been announced by Tampa Electric: **R. C. Dickinson Jr.,** Sr. Distribution Engineer; **W. J. Campbell,** administrative assistant to the vice president—finance; **W. W. Hunsinger,** assistant superintendent of production; **G. P. Wood, Jr.,** assistant to the vice president, sales; **V. S. Price,** advertising and publicity manager; **J. A. Saverese,** industrial development coordinator.

Also, **J. E. Sheridan,** director of employee relations, and **Jack Davis,** director of safety and claims.

Alfred H. Doud has been appointed associate director of public relations for Rochester Gas and Electric.

Walther H. Feldman has been made a director of Babcock & Wilcox.

New director of utility sales for Federal Pacific is **Lewis H. Walke.**

Appointment of **William E. Lett** as export sales manager for the Burndy Corp. has been announced.

WANTED

ELECTRIC UTILITY DISTRIBUTION ENGINEER—Work includes construction, operation and maintenance engineering. Coordination, load and voltage studies, electrical and mechanical calculations and assistance to customers. Salary commensurate with qualifications. Location Midwest. Write Box 221, ELECTRIC LIGHT & POWER, 6 N. Michigan Ave., Chicago 2.

ELECTRIC HEATING . . .

(Continued from page 36)

ieating panels. On the inside, a plastic aminate framed in finned satin-anodzed aluminum will cover each heating init. These will be flush with window raming and will not jut out into rooms aking up floor space. The laminate vill match furnishings in each room.

Heating System

Primary electric service will be rought from the existing hospital uilding to new transformers in the lormitory. Of the 145 heating panels hat will be served, 114 are being speifically engineered by Sun-Tron Cororation to a 31 by 30-inch size to it mounting space within the window ecess of each room. Standard units vill be used in snack kitchens, laundry ooms, and stairwells.

Heating units will have wattage ratngs of 1000, 1250 and 1500 depending n room size. Units of higher capability vill be used in the larger rooms and on he top floor where heat loss will be reater. Fifty percent convection heat nd fifty percent radiant heat will be rovided by the units.

Each of the special units will be quipped so that a key switch under the oom thermostat can be used to disconiect a portion of the heating elements n the Spring and re-connect them in he Fall. This will save on operating osts and reduce overall demand harges during warmer months.

Operating Costs

Adding the electrical system of the iew dormitory to the existing system f the hospital will have the effect of iving the dormitory an electric rate f 1.05 cents per kwh. While the utility ompany which will serve the dormiory has no special rate for electric ieating, its rates are reduced in steps lepending on use. Since the hospital is lready using up the first three blocks f kilowatt hours, energy consumption f the dormitory heating system will, n effect, be at the low rate.

Estimated annual cost of operating he electric heating system, less air onditioning, is $3336.00. Estimated nnual cost of operating a comparable il-burning system is $3463.00.

A further saving will result when fth and sixth floors are added to the ormitory. It will be necessary only to ransfer the higher wattage units from ie fourth to the sixth floor and add ew units to the fourth and fifth floors.

ESPRIT DE CORPS

It isn't every day that you find a group of people doing a good job not only because they're paid to—but because they *want* to. We're blessed with such a group at Fisher-Pierce, and the way they assemble, inspect and test F-P photoelectric streetlight controls makes you think that they personally and individually guarantee every one. In a sense, of course, they do. And while this might seem like too much fussyness to some people, the line foremen would a lot rather see it this way than their not being fussy enough.

So all this makes life easier for Fisher-Pierce, you may say, but what difference does it make to me? For one thing, it greatly raises the odds of the controls passing your incoming inspection. (Before our inspectors let them go, the controls have not only come under several sets of practiced eyes, but have been "run in" on cycling tests that are equivalent to a couple of months of turn-on and turn-off.) And there are also some proven manufacturing processes that go hand-in-hand with this "quality-consciousness": use of heat sinks to protect the CdS cells while the leads are soldered; 100% hi-pot testing; pressurized-solvent cleaning of relay contacts after hi-pot testing. As much as possible, one person is responsible for a group of related assembly operations, instead of just tightening one nut all day long.

The net result of this "esprit de corps", in our opinion, is a better control for your money. When the builders pay attention to their jobs—whether the foreman is looking over their shoulder or not—they're working for your benefit as much as ours. The Fisher-Pierce Co., 81 Pearl St., So. Braintree 85, Mass.

FP
FISHER PIERCE
PHOTOELECTRIC LIGHTING CONTROLS
AN AFFILIATE OF SIGMA INSTRUMENTS, INC.

CALENDAR OF EVENTS

February 8-9—Missouri Valley Electric Association, Annual Industrial and Commercial Sales Conference, President Hotel, Kansas City, Mo.

February 15-16—Edison Electric Institute, Electrical System and Equipment Committee, Bellevue-Stratford Hotel, Philadelphia, Pa.

February 15-16—Pennsylvania Electric Association, System Planning Committee, Hotel Pittsburgh-Hilton, Pittsburgh, Pa.

February 18-19—American Institute of Electrical Engineers, Engineering Aspects of Magnetohydrodynamics Conference, University of Pennsylvania, Philadelphia, Pa.

March 6-9—American Society of Mechanical Engineers, Fifth Gas Turbine Conference, Hotel Rice, Houston, Tex.

March 14-18—National Association of Corrosion Engineers, 16th Annual Conference and 1960 Corrosion Show, Dallas, Tex.

March 21-23—Southeastern Electric Exchange, Annual Conference, Boca Raton Hotel, Boca Raton, Fla.

March 21-23—National Electrical Manufacturers Association, First National Electric House Heating Exposition, Hotel Sherman, Chicago, Ill.

March 24-25—Oklahoma Utilities Association, Annual Convention, Oklahoma Biltmore Hotel, Oklahoma City, Okla.

March 27-29—Southwest Electric Conference, Chandler, Ariz.

March 28-29—Pacific Coast Electric Association, Engineering and Operation Conference, San Francisco, Cal.

March 29-31—22nd Annual American Power Conference, Hotel Sherman, Chicago, Ill.

April 3-8—Engineers Joint Council, Nuclear Congress, Coliseum, New York, N. Y.

April 7-8—Southeastern Electric Exchange, Engineering and Operation Section Conference, Roosevelt Hotel, New Orleans, La.

April 11-13—A. and M. College of Texas, Thirteenth Annual Conference for Protective Relay Engineers, College Station, Tex.

April 20-22—Missouri Valley Electric Association, Engineering Conference, President Hotel, Kansas City, Mo.

April 27-29—Northwest Electric Light and Power Association, Engineering Conference, Hotel Florence, Missoula, Mont.

April 28-29—Pennsylvania Electric Association, Systems Operation Committee, Bedford Springs Hotel, Bedford, Pa.

May 2-4—Edison Electric Institute, Purchasing and Stores Committee, Annual Meeting, The Warwick, Philadelphia, Pa.

May 16-18—Pacific Coast Electrical Association, Annual Convention, Stardust Hotel, Las Vegas, Nev.

May 23-25 — Northwest Electric Light and Power Association, Business Development Conference, Chinook Hotel, Yakima, Wash.

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